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Ancient Mining Processes

as illustrated by a Japanese Scroll

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IN the *Geographical Journal* for August 1940 I published a brief summary of the 'Evidence for Ancient Mining', one illustration for which was taken from a Japanese colour-print by Hiroshigi of the interior of a gold mine. As a result of reading this article, Dr H. J. Osborne White, a well-known geologist, sent me the scroll which forms the subject of the present paper. It is about 22 feet long and 1 foot broad and illustrates, in a series of attractively coloured drawings, every process from the extraction of gold-ore in the mine on Sado Island to the minting of refined gold. Mr Matsumoto of the Japanese Embassy kindly examined the scroll and was able to translate most of the captions to the pictures and other writings. Though the archaic script sometimes puzzled him, the fact that his family had been connected with mining for several generations was a compensating advantage.

The title concludes with the statement 'copied by . . . in the year 10 of the period Tempo', i.e. in 1840. No date is given for the original drawings, but several items of internal evidence point to about A.D. 1650. The Sado mine is the most famous in Japan and an outline of its early history is given in *Mining in Japan*, issued in connexion with the Japan-British Exhibition of 1909.[1] The mine was started for mixed gold and silver in 1601, but in a few years trouble from water greatly reduced the output. This was dealt with by pumping and by driving

[1] *Mining in Japan* (Japanese Bureau of Mines, Tokyo, 1909).

adits, in addition to hand baling. In 1637, Soho, a hydraulic engineer, introduced ' Tatsudoi ', which were wooden Archimedean screws, 8 ft. long, 1 foot in diameter at the top, and rather wider at the bottom. The remains of one, found in an old working place, are preserved in the University of Tokyo. In 1629 an adit was begun to drain the workings into the neighbouring Midzukane ravine. It was driven through 2880 feet of rock and was finished in 1639. A second adit was completed in 1647 and a third, in use still, in 1696. In the following year water-wheels were introduced for driving the mills that crush the ore. Now in the scroll a series of three tatsudoi is shown at work, one, but only one, adit is shown opening into the ravine of a stream, and the mills are being worked by hand with no trace of water-wheels. The date is therefore proved by these facts respectively to be after 1637 and after 1639. On negative evidence it is before 1647 and before 1697, the latter being the stronger, since the second adit might well be omitted from such a pictorial representation, whereas the water-wheels would almost certainly have been included. There is nothing in the subsequent pictures of metallurgical processes to contradict the ascription to the mid-seventeenth century ; a map, or rather section of the mine, drawn in 1695, is reproduced in *Mining in Japan*, and shows that documents comparable with our scroll were being made not much later.

Seventeenth century Japanese mining, however, is scarcely a suitable subject *per se* for an article in ANTIQUITY. The archaeological interest lies mainly in the fact that we have here pictures showing in actual use a number of tools, machines and processes known from literature and from scanty relics to have been used in Classical, and to some extent in even earlier, times in Europe and the Near East. Professor William Gowland went to Japan in 1872 as a metallurgist and on his return published a masterly series of papers on ancient mining and metallurgy in *Archaeologia* and elsewhere.[2] His illustrations were mostly taken from Japanese drawings of the methods he found still in use ; but there are numerous details in the present scroll, notably the Archimedean screws, which appear to be new. The following description of the many scenes includes everything that

[2] William Gowland (1) ' The Early Metallurgy of Copper, Tin and Iron in Europe, as illustrated by Ancient Remains and the Primitive Processes surviving in Japan ', *Archaeologia* LVI (1899) ; (2) ' The Early Metallurgy of Silver and Lead ', ibid. LVII (1903) ; (3) ' Silver in Roman and Earlier Times ', ibid. LXIX (1918); (4) ' The Metals in Antiquity (Haseley Memorial Lecture) ' (*Journ. Anthrop. Inst.* XLII (1912) ; (5) Metals and Metal Working in Old Japan ', *Trans. and Proc. Japan Society*, XIII (1915).

appears to be relevant to a study of the corresponding subjects in the Mediterranean area down to and including the Roman Empire.

The first scene, occupying about 3 feet, is a section of the mine. The workings shown are mainly on two levels, connected by blind shafts. The miners carry torches, or in one case a lamp, when travelling about, but at all working places small lamps are placed on ledges. These lamps are shallow dishes, coloured as if of terracotta, with a small wick in a spout, resembling a common classical form. Such lamps have often been found in mines ; a precisely similar one found in workings in a Thracian gold mine dating from about 350 B.C. is figured by Sagui.[3] The work of excavation is done with hammers and wedges or gads, as at Laurion,[4] Rio Tinto[5] and many other classical mines (cf. Pliny, *Natural History*, XXXIII, 4) ; the gads are all held in tongs or pincers ; no picks are shown in use. Access from one level to another is by notched tree-trunks, precisely similar to those found in the Mitterburg copper mine, active about 1600 to 800 B.C.,[6] and in Roman times at Aljustrel.[7] Timbering is used extensively for supports and at one spot for what appears to be a ventilation stopping, as at Laurion. In the furthest workings the lode is carefully distinguished from the country rock. It appears to be about 1 foot wide and the drawing would pass for the figure of a mineralized vein in a modern text-book of geology. At one point it is being mined, while at another level an overseer is pointing it out to a party of well-dressed visitors (? directors). Greek and Roman driving through country-rock to reach a metalliferous vein is known, for example, at Cassandra[8] and Coronada (Spain)[9] respectively, whereas in the Egyptian gold mines described by Agatharchides in the passage quoted later, the veins of shining rock (quartz) were followed by tortuous passages.

Special interest attaches to the means of draining the mine. The adit is mentioned above ; such adits appear to have been introduced by the Romans in Imperial times ; the best examples are those at Mouros in Portugal.[10] But a large part of the workings shown is below adit

[3] C. L. Sagui, ' Ancient Mining Works of Cassandra, Greece ', *Economic Geology*, XXIII (1928).

[4] E. Ardaillon, *Les Mines du Laurion dans l'Antiquité* (Paris, 1897).

[5] W. G. Nash, *The Rio Tinto Mine* (London, 1904).

[6] J. Andree, *Bergbau in der Vorzeit* (Leipzig, 1922).

[7] O. Davies, *Roman Mines in Europe* (Oxford, 1935).

[8] Sagui, op. cit. [9] Davies, op. cit.

[10] F. A. Harrison, ' Ancient Mining Activities in Portugal ', *Min. Mag.*, XLV (1931).

level, and three different means are used to raise water to that height, whence it could flow away by gravity. At the extreme end of the workings water is baled by hand with buckets into a tank ; Pliny (XXXIII, 6) tells us that in a mine at Carthagena slaves were employed in hand-baling night and day. The buckets appear to be of wood with metal rings : Roman bronze bucket-rings have been found in the Rio Tinto mines.[11] From the tank water is raised by a succession of three Tatsudoi, or Archimedean screws. Such screws are described as in use in Spain by Strabo (III, 2, 9) under the name κοχλια Αἰγυπτια, cochlea being also the word used for a screw in Hero's dioptra and by Oppian for the spiral mollusc *Turritella*. The remains of many such screws have been found in ancient mines ; those from the Centinello mine are fully described, with restoration drawings, by Rickard ;[12] they appear to have been cylindrical, whereas the tatsudoi are slightly tapered. The casing of these Japanese screws is of wood, built up barrel-wise, with metal rings ; judging from the figures of the miners the dimensions in the picture agree with those given above. The Roman screws from Spain were 3.6 m. long and 48 cm. in diameter. From Beaune (Haute Vienne) a Roman example, though incomplete, is 8 m. long, 30 cm. diameter, and made of chestnut wood.[13] The Roman screws were usually worked by slaves treading on lugs attached to the outside of the barrel, while supporting themselves by holding a fixed horizontal bar, as in a wall-painting at Pompeii and in a terra-cotta figurine of Ptolemaic date from Alexandria now in the British Museum. The tatsudoi are worked by a crank attached to the top of the screw ; one such crank-handle has been found in the Spanish mines. The topmost screw delivers into a wooden tank placed at the bottom of a vertical shaft, whence the water is raised by a bucket and rope over a simple pulley and delivered by hand into a wooden launder running along the adit. Pulleys, both simple and compound, were familiar in ancient times, but I am not aware of any found in mines, capstans or windlasses being more usual.

Outside the mine the first scene is the blacksmith's shop, with two furnaces, in which used gads and picks are being sharpened and tempered. Such a shop must have existed at all mines : in the salt mines at Hallstatt a modern miner uses ten steel picks in an eight-hour shift. The bronze picks used in the Iron Age must have been

[11] Nash, op. cit.

[12] T. A. Rickard, *Man and Metals* (New York and London, 1932).

[13] P. H. Sevensma, *Les Gisements d'Or de la Région de St. Yrieix* (Geneva, 1941).

constantly recast and sharpened.[14] The characteristic bellows are more clearly shown further on in the scroll and are discussed below. Nearby is a shed in which women are hand-picking and trimming (with geological hammers) the richer lumps of ore; they are watched by two government officials (two-sword men). Such officials appear in almost every remaining scene. It may be mentioned that these civil servants are usually either smoking or drinking tea; let me repudiate, in anticipation, any reader's suggestion of a similarity to England today!

The remaining scenes at the site of the mine show in succession the marking of bags of ore with the distinguishing letter of each gang of miners; two rooms of the office, in the lower of which clerks are busy with an abacus and note-books and incidentally boiling the kettle; in the upper room the mine-manager is having an interview with two higher officials—here an execution sword hangs ready in a rack on the wall and a surprisingly modern looking chest of drawers is shown, presumably filled with plans and documents. The manager corresponds to the ἐπιστατης των ἐργων of Demosthenes, and the overseer described by Agatharchides in his account of the gold mines of Ptolemaic date in Nubia; he is a one-sword man. Nearby the officials appear to be enjoying themselves in a canteen and at the same time examining samples of ore. It is an indication that the present scroll is a copy of an older and perhaps damaged original that one of the figures has his head reversed to look directly backward between his shoulders, a mistake not likely to have been made by the highly skilled artist implied by the whole work. Near the gates gangs of miners receive their pay for the marked bags of ore; soldiers are on duty here.

Immediately outside the enclosure sacks of ore are being laden on bullocks for transport to the refinery; on the way they are seen crossing a river by a bridge and passing a 'good pull in for transport', mentioned later. Within the refinery the bags of ore are first emptied into storage bins. The next scene shows mills for powdering the stone. The cylindrical mill is coloured a pale greenish tint and is probably made of trachyte rock; trachyte from Milo was used for the purpose at Laurion.[15] It is rotated by means of a horizontal wooden bar pegged into one of several lugs and thus acting as a cam (see PLATE). A cross-piece at the far end enables three men to give the reciprocal motion; a fourth ladles in the ore and also apparently helps over the dead points.

[14] A. Mahr, *Das Vorgeschichtliche Hallstatt* (Vienna, Natural History Museum), 1925.

[15] Ardaillon, op. cit.

It is not possible to see the interior construction of the mill. Those at Laurion (μυλα) had a truncated cone as the base on which a bi-concave ring was rotated capstan-wise by handles or spokes[16] (κωπαι in Theophrastus on *Stones*, VIII, 59 and Diodorus III, 13). The bases found in the Egyptian desert were saucer-shaped with a slight boss in the centre perforated to take the vertical axle.[17] From the account by Agatharchides, preserved by Diodorus, these must have resembled the Japanese form very closely ; he says : ' the next task is performed by women at mills placed in a row ; standing two or three together at one handle and filthy and almost naked women work until the measure handed to them is completely reduced, and to every one of those who bear this lot death is better than life ' (he has previously mentioned the overseers armed with hide whips). That the number of workers at one handle is three is no doubt a mere coincidence, but the women work standing, as do the Japanese, for each of whom a mat for each foot is provided, whereas at Laurion the workers presumably walked round in a circle.

After leaving the mill the powdered ore undergoes water-treatment in two stages. The first is essentially classifying to secure a uniformity of grain-size before it passes to the concentration tables shown in the second scene, where the heavy metal is separated from most of the waste. For the first, large and deep tanks are used to give a rapid and tumultuous flow along a sluice, which is no doubt furnished with riffles, though these are invisible beneath the water. The outlets from the tanks are inclined towards each other at an angle, thus giving additional agitation. In the picture one man is either spreading or collecting the material with a long-handled scoop while two others are engaged in some kind of panning process. The instruments used are square and nearly flat ; both are coloured a chocolate-brown and in that more clearly seen lines are drawn from each corner towards the centre, the result having a strong resemblance to a rush chair seat. Each figure has a barrel or tub on each side, the larger having a short-handled scoop in it in both cases. It seems quite obvious that the square objects are basket-work sieves : the material that passes through them goes into the large buckets, from which it is ladled by means of the scoops on to the concentrating tables, while the smaller buckets receive the material that will not pass the sieves, to be returned to the mill.

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[16] Ardaillon, op. cit.

[17] C. J. Alford, *Trans. Inst. Min. & Met.*, X (1902).

The concentration plant consists of two identical pairs of tables, gently sloping, apparently about 18 feet long and 2 feet 6 inches wide ; between them is a rather wider channel, not in use as shown, of which the exact purpose is doubtful. A large reservoir at the top serves four small shallow tanks, one for each table. Into these women ladle the powdered ore with scoops and stir it with brooms. The women are fully clothed, and so light is their task that one is actually suckling her baby while working. Each table is covered with a strip of cloth which retains the heavy gold particles, while the gentle flow of the water is sufficient to carry the lighter quartz and other waste over the ends into a trough at the base. A man is shown washing the gold off one cloth strip, hanging over a frame, into a tub. On one of the strips there is an inscription which, Mr Matsumoto assured me, reads ' cats '. For this word I can offer only a tentative explanation. Hides tanned with the hair on have been used in ancient times for the same purpose; we have all heard of the golden fleece, and in quite recent times plush has been favoured ; but the number of cat-skins required would be very great, the hair is too smooth and straight, and much larger and more suitable skins were available. It is therefore most improbable that ' cats ' is a survival name for the cloths, derived from a time when cat-skins were used. But Kaempfer[18], writing in 1690, describes the Japanese cats as 'of a whitish colour with large yellow and black spots'; since the Sado ore contains some galena and blende as well as gold, the whitish cloth strips after use would show patches of yellow and black concentrated metals. According to *Mining in Japan* the sloping tables are called Nekonagashi but I do not know the derivation of this word.

Judging from the remains found and excavated the concentrating tables (καθαριστηρια) at Laurion must have been almost precisely like those shown in the scroll. Water was, however, very short there and storage reservoirs to conserve rain-water over the periods of dry weather were elaborate ; consequently the waste channel at the base of the tables was taken round to the head and the water from it baled up for re-use. They have been described in detail and carefully figured by Ardaillon[19]: the tables were well built of masonry and the surface finished smoothly with a very fine cement. Whether the surface of the latter sufficed for the separation, the concentrated ore, in this case argentiferous galena, being scraped off at intervals, or whether removable strips of cloth or

[18] E. Kaempfer, *The History of Japan*, 1690–92. Translated by J. G. Scheuchzer, 1727, reprinted Glasgow, 1906.

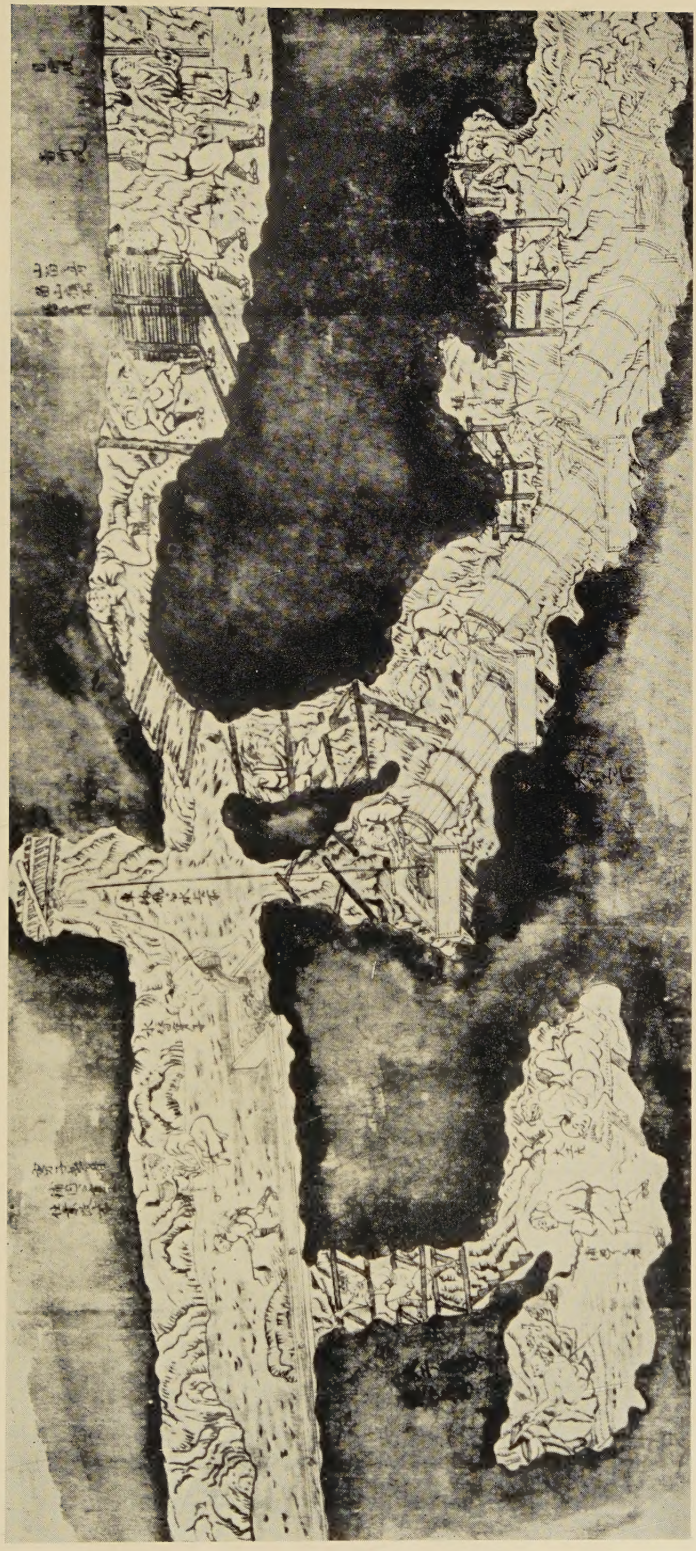
[19] Ardaillon, op. cit.

skins were laid on the cement is uncertain. In either case the process would be effective as the difference in specific gravity between the galena and the gangue is roughly the same as for gold and quartz. The tables at Laurion are of varying lengths from 4 to 15 metres and of slightly varying slopes. At Cassandra Sagui[20] thinks that some sort of jigger was used; the tables were up to 20 metres long. For the classifier high tanks were used as at Sado to give a turbulent flow of aerated water, and sieves were in use for spreading the powdered ore and returning the over-size fragments to the mill.

But it is as illustrations to the classical literature rather than of the remains that our scroll is valuable. Diodorus Siculus, quoting Agatharchides, says (III, 1A) 'lastly they rub the powder on a broad board slightly sloping (ἐπι πλατειας σανιδος μικρον ἐγκεκλιμενης), pouring water over it; whereupon the earthy matter in it, dissolved away by the action of the water, runs down the inclined board, while that which contains the gold remains on the wood because of its weight' (approximately Loeb Library translation). Strabo mentions the washing of ores in Spain, giving as his authorities Posidonius for Lusitania, and Polybius for Carthagena (III, 2, § 9 and 10). Of the former locality he says that women wash (πλυνειν) the ores in sieves woven like baskets; of the latter that it is to be sifted and broken a third time. The dregs which remain after the fifth time are to be melted (Hamilton's translation). It is obvious to any mining man or geologist that, as Davies[21] points out, these passages make nonsense. No amount of sieving would affect the proportion of metal in the powdered rock. Before the second passage Strabo says 'the rest of the process I pass over as it is too long'. In compressing it he has telescoped into one two distinct processes, the classifying or sizing and the concentration, both being done with water (the passages are all in *oratio obliqua*, so he may be excused). The basket-work sieves were for sizing preparatory to gravity-concentration on tables. Our scroll shows all the necessary details, and for that reason it is described above at some length. Pliny's account of gold mining barely alludes to any washing or concentration of milled gold-bearing rock. Some washing process must have been used at the Roman gold mine of Dolaucothy, Carmarthenshire. The existing aqueduct which brought water for baths, etc. also served a double reservoir which Davies[22] says is only paralleled at Laurion. Beyond this indication nothing seems to remain of the washing.

[20] Sagui, op. cit. [21] Davies, op. cit. [22] Davies, op. cit.

PLATE I

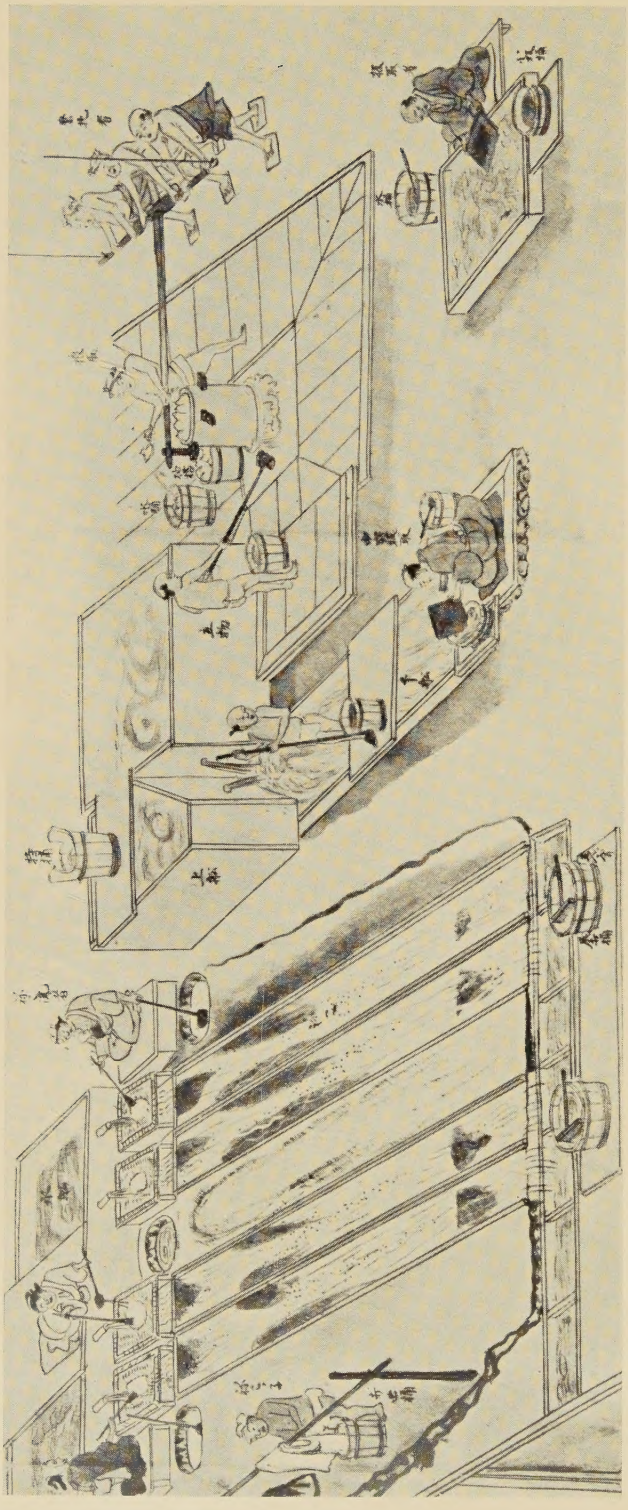


A JAPANESE SCROLL ILLUSTRATING ALL STAGES FROM THE EXTRACTION OF GOLD ORE AT A MINE ON SADO ISLAND, JAPAN, TO THE MINTING OF REFINED GOLD

Probable date of original about 1640. A section of the mine, showing methods of de-watering, etc.

facing p. 200

PLATE II



MINE ON SADO ISLAND, JAPAN

Separate scenes in the mill: grinding, classifying and concentration of the ore

We now pass into a separate enclosure devoted to the smelting of the concentrates. Two main furnaces are shown, each beneath a chimney stack built on four legs. The hearths appear to be simple saucer-like depressions, from other records probably pots buried up to the rims, in which the ore is roasted with charcoal. One furnace is in full blast, the other has finished a roast, and the cake of gold is being extracted. The tuyeres, or bellows nozzles, are clearly shown and appear to be of pottery ; so far the resemblance is to all primitive metal-smelting hearths throughout the ages. Clay tuyeres have been found at Laurion and at most of the ancient mining sites. The bellows are, however, unlike anything known in classical or earlier times. An Egyptian wall-painting of about 1500 B.C., often reproduced, shows two pairs of ordinary bellows blowing a hearth-furnace ; each of a pair is alternately compressed by the foot of a slave and expanded by a cord held in his hand. Something similar was in use down to medieval times in Europe. The Japanese bellows are better described as air-pumps ; a piston is pulled in and out of a casing ; it is packed with feathers (not visible in the picture) to make the fit reasonably air-tight. The casing, both here and in China is rectangular (see below) ; a good illustration of a large bellows is given by Gowland,[23] from a Japanese view of tin-smelting and is accessible to most readers of ANTIQUITY. In Borneo, Sumatra and other parts of the Far East a hollowed tree-trunk with a similar piston is used. The apparatus as a whole may be likened to the body of a street-piano, but instead of a revolving handle in the front it is worked by the piston-handle at the end. The man there shown serving the hearth in blast is obviously working his hardest, the one at the second and those in the smaller refining hearths are at their ease. Three of these smaller hearths, each with its bellows, are shown ; in them the cakes of metal from the smelters are re-melted and purified until, in the form of small discs, they reach the balance room. Both the refining and the weighing are watched by government officials, he in the latter room noting in a book the weights recorded by the balance man, who also has two swords. The entrance gate is shown, complete with notice threatening penalties to any unauthorized person attempting to enter. It is noticeable that, whereas the scroll as a whole reads naturally from right to left, the processes within the smelter enclosure are shown from left to right ; this fact suggests a drawing of the actual building rather than a diagrammatic representation of the processes.

[23] Gowland, op. cit. 2 (4),

In a building separated from the smelter by a public street, in which a fishmonger is delivering his goods but is in danger of tripping over the dog asleep in the highway, is the mint. Casting, weighing and recording are shown, of course under the watchful eyes of officers with swords. One process shown in considerable detail calls for comment. The gold of Sado is alloyed with a considerable proportion of silver : the product is therefore pale in colour and would now be called electrum ; this is the ' white gold ' of Herodotus and Pliny (XXXIII, 4) ; ἤλεκτρον or electrum usually means amber, though Pliny says that gold with one-fifth part of silver is called by that name from its colour. The new (1940) Liddell and Scott says that the meanings of the Greek word are difficult to distinguish in the early poets. Much Egyptian and other early gold was ' white '. The process shown at the end of the scroll was devised to get an outward appearance of pure gold and is described, presumably from Japanese documents, by Gowland :[24] ' the coins were first painted with a mixture composed of iron and copper sulphates, potassium nitrate, calcined sodium chloride and resin made into a paste with water. They were carefully heated to redness on a grating fitted over a charcoal fire. After this they were immersed in a strong solution of common salt, washed with water and dried. Their surface now consisted of a layer of pure gold. This process was followed by the old workers in gold and, with trifling modifications, is still practised at the present day '. Gowland's plate (IV) is taken from a native print or drawing said to be early nineteenth century. Our scroll shows the process very clearly, but instead of the grating over a charcoal fire we have the usual hearth and bellows. The gentle heat required is, however, indicated both by the absence of flames such as appear in the smelter and by the blower, who is working his piston with one hand only and is keeping a close watch on the fire. Gowland elsewhere[25] mentions the use by the Japanese of the juice of unripe plums in the paste. It is certain that some such process was known from very early times. Agatharchides, in continuation of the passage already quoted on washing, says that the gold is ' mixed with a lump of lead (μολιβδον) proportionate to the mass, lumps of salt and a little tin, adding thereto barley-bran ; after baking in a kiln they recover the gold in pure form '. Strabo, speaking of the Spanish mines says that after melting the residue is electrum ; ' this, which contains a mixture of silver and gold, being again subjected to the fire, the silver

[24] Gowland, op. cit. 2 (5).

[25] Gowland, op. cit. 2 (4).

is separated and the gold left ; this heating is done with straw the flame of which is soft, whereas charcoal (*ἀνθραξ*) melts it too much by its vehemence '. Though salt is not mentioned in this condensed account it must have been used and the gentle heating is indicated. Pliny (XXXIII, 25) is for once more helpful ; mixed up with remarks on the medicinal value of gold (not quite such nonsense as we thought before injections of the element were found to cure some forms of rheumatism !) he says ' it is heated with double its weight of salt and thrice its weight of *misy* and again with two portions of salt and one of a stone called schistos ', the result being gold pure and uncorrupt. Hoover[26] in his Historical Note on Parting Gold and Silver says that Percy, *Metallurgy of Silver and Gold*, p. 398, ' rightly considers that this passage undoubtedly refers to the parting of silver and gold by cementation with common salt ; especially as Pliny further on states that with regard to ' misy ' in purifying gold they mix it with this substance. There can be no doubt from the explanations of Pliny and Dioscorides that misy was an oxidized pyrite, mostly iron sulphate. Assuming the latter case, all the necessary elements of cementation, i.e. vitriol, salt and an aluminous or siliceous element are present '. In this conclusion he is followed by Bailey.[27] But even in literature we can go back much further. Campbell Thompson has investigated with great care and industry Assyrian cuneiform tablets giving essentially recipes for making and colouring glass ; he concludes *inter alia* that the manufacturers of that time were conversant with several acids and with their actions on different minerals.[28] They could have used the salt-sulphuric acid method of separating gold and silver and they did so 2800 years earlier still ! A spear head 39 cm. long found at Ur has been analyzed ; the interior consists of silver 60 per cent., gold 30, copper with a trace of tin 10, but the outer surface is almost pure gold. This result can only have been achieved by approximately the Japanese process illustrated.

Enough has been said to show that the scroll partly illustrated (see PLATE) throws a valuable light on mining and metallurgical remains from the Bronze Age to the Roman Empire found in the lands around the Mediterranean, and might well serve for illustrated editions of the surviving literature on the subject. In pointing out the resemblances we are following in Gowland's footsteps, as have several modern

[26] H. C. and L. H. Hoover, *Agricola—De re Metallica* (London, 1912).

[27] H. C. Bailey, *The Elder Pliny's account of Chemical Subjects* (London, 1929, 1932).

[28] R. Campbell Thompson, *Chemistry of the Ancient Assyrians* (London, 1925).

writers. But Gowland has not, as far as I am aware, raised the obvious question—why the resemblances should be so close ? It seems hardly possible that so many processes should have been independently evolved along similar lines ; it is therefore desirable to consider such evidence as is available on which to base a statement that Japanese mining in the seventeenth century is directly derived from that of classical Europe.

It is generally accepted that almost all Japanese culture and technique, e.g. writing, painting, ceramics, is derived from China, largely through Korea. Our best authority on the native literature dealing with the present subjects, Geerts, says ' Les connaissances que possèdent les Japonais en métallurgie leur sont venues de la Chine par l'intermédiaire de la Corée '.[29] The Japanese themselves say that their mining industry came from Korea between 660 B.C. and A.D. 200. This was on a small scale, but more serious mining began between A.D. 370 and 700, copper from native ores was used for coinage from 710 and gold was discovered in 750. The earliest gold workings were here, as everywhere, placers, i.e. the metal was washed from river-detritus, not dug from the vein. True mining of the latter kind began with the Omori silver mine in 1310, while the Sado gold and silve mine, shown in the scroll, was started in July 1601 (*Mining in Japan*). We know that there was some mining in classical times as far east as India : Diodorus (II, 36) says that the earth there ' contains rich *underground veins* of every kind of ore : for there are found in it much silver and gold, not a little copper and iron, and tin also and whatever else is suitable for adornment, necessity and the trappings of war '. The mention of tin must refer to Burma rather than to India proper, where the only tin known is a mineralogical curiosity, not an economic deposit. Strabo (XV, 1, § 30) mentions valuable mines of gold and silver in the mountains ' according to the testimony of Gorgus, Alexander's miner. The Indians, unacquainted with mining and smelting, are ignorant of their own wealth and therefore traffic with greater simplicity '. The miners of Macedonia were the most skilled in late Greek and Roman times, and the passage suggests the probability that their methods were introduced into India. Strabo scorns the famous gold-digging ants of Herodotus (III, 102), but the fact remains that gold was being produced from underground. Pliny (VI, 20) says that in some part of the mountains of India the inhabitants

[29] A. J. C. Geerts, *Les Produits de la Nature Japonaise et Chinoise* (Yokohama, 1878).

mine gold and silver and (XI, 31) places the ants who ' cast up gold above ground out of the holes and mines within the earth ' in the country of the northern Indians, which Maclaren[30] thinks is Turkestan.

It is a far cry from scrappy first century statements about India to sixteenth-century China, and the links known to exist are few. In Malabar, Brough Smythe[31] has described ' ancient ' gold mines of two distinct periods ; but beyond the fact that supplies of gold were abundant in this district in the eleventh century A.D. no dating is possible. In fact, as Maclaren says of the history of Indian mining, it remains to be written with the spade rather than with the pen. He mentions that in Tibet mining is stated to be old in A.D. 900 and that a legend in that country is closely similar to one which, for superstitious reasons, put a stop to ancient mining in Serbia. He regards Burma as the Golden Chersonese of Ptolemy and the Chryse of Pomponius Mela (III, 11), who however is cautious enough to question whether the country is so named from its yield of gold or whether the ' ancient traditions ' of abundant gold are based solely on the name. Gold mines in Sumatra are mentioned in the Ramayana, say A.D. 1600. Chinese mining for copper is said to have begun about 2600 B.C., but in such remote periods all mining would be alike and might have arisen independently everywhere. More definite documentary evidence is available 500 years later. But the subsequent history is interrupted and obscured by the religious principles of Feng Shui, which forbad disturbing the homes of the earth-spirits. Religious scruples and greed for gold or other profitable minerals were apt to alternate even in individual emperors. Progress was therefore slow and records of what was often an illegal occupation are scanty. Hoover mentions[32] that the emperor Wan Ti in 1620 made a will in which he accused himself, as a warning to his son, of many evil deeds, amongst which is the opening of nine gold and silver mines. One of these has been identified by the presence of coins of his reign ; as a general rule mining stopped when water was reached, from lack of pumping machinery, but this mine has a drainage-adit which the Chinese attribute to Korean workmen ; the date is curiously close to that of the first adit at Sado mentioned above. A few historical notes are

[30] J. M. Maclaren, *Gold* (London, 1908).

[31] Brough Smythe, *Gold Mines of Wynaad and Carcoor Ghat (Malabar)*. H.M.S.O. 1880).

[32] H. C. Hoover, ' Metal Mining in China ', *Trans. Inst. Mines and Metals*, VIII (1900).

given by Wong[33] who mentions the use of ' a crude earthenware lamp, not unlike those used by the Romans '.

There are one or two points not illustrated by the scroll, which help to link Japanese mining with that of the Mediterranean and the Near East. Fire setting as a means of breaking the rock in the mine goes back to the earliest metal mines known in Europe, and remained customary till the use of gunpowder took its place (see the general account in Hoover[34]). It is mentioned in the Book of Job (XXVIII, 5), say 400 B.C., and by Pliny and many other authors. *Mining in Japan* records its use for the harder rocks. A long account of the touchstone is given by Theophrastus (*On Stones*, LXXVIII). Pliny, who calls it *coticula* says that the proportion of gold and silver could be gauged by its means with great accuracy ; incidentally this in itself almost necessarily implies the ability to separate the metals just discussed. It was a black siliceous rock or lydite. In Japan a black siliceous shale was used, and, by means of a set of trial plates, the silver content was gauged within one per cent.[35] In proof of early trade in minerals between the Levant and the Far East it may be pertinent to mention the jade found by Schliemann in the first, second, third and fifth cities at Troy, which can only have come from the Kuenlun mountains north of Tibet.

Two items in the scroll call for special discussion. The bellows are peculiarly Chinese ; nothing like them is known in the Mediterranean area, but they are found all over China and the Far East generally. The piston is packed with feathers and is always square. For a given area of piston-face and therefore of available air-blast the friction against the sides is far greater than with a circular face which, as the Egyptian and Greek mathematicians and engineers well knew, would give the minimum perimeter. In fact this Chinese speciality, though perhaps an advance in principle on simple bellows, is as anomalous as the words in which the machine is most readily described—it is an air-pump with a square cylinder. The hollowed tree-trunk of the Malay miners, besides avoiding the building up of a rectangular box with inevitable risks of leakage at the joints is as round as a cylinder should be !

The Tatsudoi or Archimedes' screws may possibly be an independent Japanese invention by Soho in 1637. In view of the fact that

[33] W. A. Wong, *Mineral Wealth of China*. (Shanghai, 1927).

[34] Hoover, *Agricola*, op. cit.

[35] Gowland, op. cit. 2 (5).

Roman examples are known from Spain and Portugal one might suspect Portuguese influence. It has been calculated[36] that between the years 1545 and 1625 the Portuguese exported twenty million pounds worth of gold from Japan. Moreover in 1609 the Spanish governor of the Philippines, after being shipwrecked in Japan, was asked to supply fifty miners. He agreed on condition that a half-share of the produce went to the miners and a quarter each to the Japanese authorities and the king of Spain ; the latter was to be allowed to send commissioners to safeguard his interests.[37] On the other hand the use of the screws seems to have died out completely in Europe in Roman imperial times. There is no mention of any such machines in Agricola's *De Re Metallica* (1556), or Kircher's *Mundus Subterraneus* (1664), which between them give a complete picture of mining and pumping machinery of all sorts in sixteenth and seventeenth century Europe. It is therefore unlikely that any mining man brought the idea from Europe to Japan. There is the alternative that a Jesuit missionary with a knowledge of the classical writers was responsible. As a personal opinion on what must at present remain an open question I prefer to suggest that the invention reached central or eastern Asia before A.D. 500 and to hope that datable remains will turn up some day.

On the whole it seems reasonable to say that Japanese mining is a direct descendant from that of classical Europe, a conclusion which gains some support from Mackenzie's study of the *Myths of China and Japan*. In this connexion let me end on a suggestive and convivial note. In England an inn or beer shop used to be known as an ivy-bush, from the bush hung up as a sign (e.g. in Lyly's *Euphues*, 1580) and possibly connected with the fact that ivy was sacred to Dionysus and Bacchus. The wayside pub shown in the scroll as used by the transport men between the mine and smelter may not be the Old Bull and Bush, but certainly its sign, hung by a string from the corner of the eaves, is a bush.

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[36] Maclaren, op. cit.

[37] Capt. F. Brinkley, ' Japan', in *Encyclopaedia Britannica*, 11th edition.

Bees in Antiquity

by Grahame Clark

As purveyors of honey and wax, substances rated high by early man, bees would seem to deserve more attention from archaeologists than they have in fact received. In this respect they serve to point a moral. The tendency has all too frequently been to concentrate on those aspects of ancient cultures which lend themselves most easily to classification, to the neglect of those which promise the closest insight into the working of the societies under review, thus inverting the true outlook of the archaeologist and turning him away from the activities of human beings towards a world of abstractions. The thesis one would like to urge is that the prime concern of archaeology is the study of how men have lived in society, of how within the social framework they have striven to satisfy and multiply their wants. From such a standpoint the means adopted to gratify the taste for sweet things, a taste shared by man and beast and physiological in its basis, merits at least as much attention as current fashions in safety-pins and other topics beloved of ' museologists '.

Honey is by far the most ancient source of sugar. For all practical purposes beet-sugar is little more than a century old. The process of extraction was, of course, based on Marggraff's original discovery of 1747, but it was not until some years later that it was put on a commercial basis : the first factory was opened in 1801 and from the decade 1830–40 the success of the new industry may be said to have been assured. The exact origin of cane-sugar remains obscure, though it is known to be of high antiquity. It was certainly to cane-sugar that Strabo referred when, quoting Nearchus, the famous admiral of Alexander the Great, he wrote of reeds being found in India which ' produce honey, although there are no bees '.[1] After a long, but as yet unmeasured history in India and southeastern Asia, sugar-cane cultivation spread with almost startling rapidity in two separate movements, first with the Moors to Egypt, Sicily and South Spain, where it is mentioned in the 10th century, and where in Granada and Andalusia

[1] *Geography*, 15, 1, 20.

it had become a common crop by the 12th century,[2] and secondly, to Madeira and the Canaries and so to Brazil and the West Indies in the wake of New World discovery. Cane-sugar may be said to have flooded into Europe as both the plantations and the facilities for trans-Atlantic travel developed.

The combined result of sugar-cane cultivation and the extraction of sugar from beet has been to make sugar far more abundant in modern

RAIDING THE WILD BEES' NEST. A SCENE FROM ROCK-PAINTINGS AT LAS CUEVAS DE LA ARAÑA, VALENCIA, SPAIN
(after Hernandez-Pacheco)

times than ever before.[3] The comparative scarcity of sugar in the past only served to enhance the importance of honey, the only source of supply available. But honey is something far more than a pleasant sweet ; its dietetic value is high, it is a potent ingredient of intoxicating

[2] *Cambridge Economic History of Europe*, I, 355.

[3] This is illustrated for instance by the following figures for estimated sugar consumption in Great Britain : in 1700, 10,000 tons, in 1800 150,000 tons, and in 1885, 1,110,000 tons.

drinks and it has an attractive smell, which the ancient Egyptians recognized by using it in the manufacture of perfumes.

The many virtues of honey have made it a substance eagerly sought after from the earliest times. At first no doubt it was by seeking out the nests of wild bees that honey was obtained and we may imagine that wild honey played an important part in the diet of palaeolithic man, wherever conditions were favourable. A sidelight on the quest for honey is thrown by a painting from the rock-shelter art of eastern Spain at Las Cuevas de la Araña, whereon the artist depicts a man actually raiding a nest.[4] Wild honey certainly plays an important role in the dietary of modern primitive peoples at a food-gathering level of culture. Indeed, Donald Thomson, describing a group of natives of Cape York Peninsula, Queensland, goes so far as to claim that wild honey or ' sugar bag ' is ' probably the most valuable single article of diet ' available to them.[5] The equipment used by the Cape York people in the collection of the honey comprises a long cane or rod of pliant wood, with a frayed brush at the end to mop it out of hollows in trees and receptacles of bark to contain it, both adequate for the purpose but neither of them likely to leave any archaeological trace.

The collection of wild honey must have been a laborious business involving movement over wide areas, so it is not surprising to find that bees were domesticated at an early date. In ancient Egypt, where the evidence is best preserved, honey featured among offerings from the earliest times[6]; bee-keepers were an officially recognized profession and honey formed part of the divine revenues. Honey was eaten freely, particularly on certain feast days. It was commonly used in the preparation of pastries and as a medium for the preservation of dates. The ancient Eygptians also appreciated the intoxicating qualities of honey and sometimes mixed it with their wine. The use of honey in the preparation of strong drink certainly goes back to the Early Bronze

[4] Reproduced from Francisco Hernandez-Pacheco, 'Escena Pictoria con Representaciones de Insectos de Época Paléolitica', *Real Soc. Española de Hist. Nat.*, T.d. 50 Ann., pp. 62–67, (Madrid, 1921). An analogous scene is probably represented in the Cueva de la Vieja, Alpera.

I have to thank Mr M. C. Burkitt for his great kindness in looking out and reproducing this illustration and for providing the full reference. Absence from libraries has, in general, prevented me from doing more than indicate in broad outline the scope of what I believe to be a subject of importance for the student of early man.

[5] *Procs. Prehist. Soc.*, 1939, v, 220.

[6] F. Hartmann, *L'Agriculture dans l'ancienne Égypte*, pp. 205–6. (Paris, 1923).

Age in Europe, for analysis of the sediment in the birch-bark pale from the Guldhøj oak-coffin burial in Denmark showed that honey and myrtle had been added to cranberry wine. Mead, the drink of our Anglo-Saxon forefathers, was essentially a liqueur obtained by boiling drained honey combs. A similar beverage (' metheglin ') was popular in Ireland in days gone by.[7] Mead (*pur'e*) is still consumed among some of the Finno-Ougrian peoples. As a mild laxative honey was utilized by the physicians of ancient Egypt, and we may assume that its properties in this direction were well appreciated in the peasant communities of prehistoric and medieval Europe.[8]

Bees-wax has played a part hardly less important than honey, although in rather different fields. Its chief merits are that it can be modelled with facility, that when molten it takes the minutest impressions of a mould and that, once hardened, it retains its shape in any temperature normally experienced. The artistic possibilities of wax as a medium have been appreciated from the earliest times. Wax was used by the ancient Egyptians, not only to seal the nose, eyes and mouth of mummies,[9] but also to model the mask.[10] It is possible that the ancestral wax masks cherished by patrician Roman families[10a] derive ultimately from this Egyptian source. In the same line stood the royal models at Westminster and the wax figures of Madame Tussaud's. The realism possible to the modeller in wax was appreciated by the magicians of ancient Egypt, who in the practice of their calling made frequent use of bees-wax.[11] In this connexion it is interesting to recall Breasted's reference to the celebrated lawsuit in which certain individuals were prosecuted for endeavouring to bring harm to Ramses III by practising on a wax image.[12] From later times

[7] E. E. Evans, *Irish Heritage* (Dundalk, 1942), p. 78.

[8] Possibly the honey buried in a glass bottle in a Romano-British grave at Bartlow Hills was therapeutic in intention. See L. C. West, *Roman Britain* : *the objects of trade* (Oxford, 1931), p. 24. Pliny, *Nat. Hist.*, XXII, 50, is eloquent on the medical virtues of honey.

[9] A. Lucas, *Ancient Egyptian Materials*, p. 132.

[10] Hartmann, op. cit. 208.

[10a] e.g. Pliny, *Nat. Hist.*, XXXV, 2 and XXI, 49. Pliny makes the point that wax can easily be made to take colours.

[11] Lucas, op. cit. 133, found that though friable bees-wax from Egyptian tombs appeared to have undergone no drastic change. From eleven instances he established a range of melting from 64° to 70°C., which compares with 63°C. for modern commercial bees-wax.

[12] *Ancient Records*, IV, 220, para 454.

one may cite the medallion art of the Renaissance and Flaxman's originals for Wedgwood pottery designs as examples of the possibilities of bees-wax. For the lowlier craftsman, also, bees-wax had many uses. Lucas notes, for instance, that it was used by the ancient Egyptians to provide a transparent surface covering for painted surfaces and to lute on vase covers.[13]

The wealth of evidence from ancient Egypt makes it clear that bees-wax as well as honey must have been produced in considerable quantities, facts which point to intensive apiculture in the Nile valley during ancient times. Of the methods employed the tomb-paintings give us only partial information. In a scene on the tomb of Rekhmara (18th dynasty) we see bees being smoked out and their honey extracted : one man is depicted holding the torch, while a second removes the honey by hand and a third stores it in large jars.[14] Other scenes show jars of honey being sealed. Some indication as to the nature of the hives used in ancient Egypt is given in the tomb-paintings, which illustrate both pots and thick rolls of papyrus employed for this purpose.

Direct evidence of the use of bees-wax in prehistoric Europe is hardly to be expected, but its employment on the widest scale would seem to be indicated by the prevalence of the *cire perdue* method of casting. It has recently been argued that the open stone moulds characteristic of the Early Bronze Age, previously interpreted as designed to cast the metal itself, were in fact meant to prepare the wax models, later to been cased in clay, melted out and replaced by molten metal.[15] In any case it is certain that the method was extensively employed during the later stages of the Bronze Age and it is a fair inference that bees-wax was the medium.

It may be assumed that both honey and bees-wax were consumed on a large scale in prehistoric Europe. What is not established is the extent to which these substances were gathered from the nests of wild bees or were the product of apiculture. That the distinction is likely to be elusive in a primitive society is well brought out by considering the methods of obtaining honey still employed by peoples dwelling on the margins of settled economy in the great forests of Northern Europe, under conditions not dissimilar from those which obtained much earlier in more favoured parts of the continent. Among the Finno-Ougrian

[13] op. cit. 132 and 133.

[14] Hartmann, op. cit. 204–6.

[15] *Procs. Soc. Ant. Scot.*, LXIX, 424–30.

peoples of the Volga-Kama region described by Manninen,[16] the quest for wild honey grades almost imperceptibly into the production of garden honey. Even in the most primitive stage we find some element of proprietorship : thus a man, finding a swarm of wild bees in a tree while ranging far away from human settlement, will mark the trunk with his house sign, so establishing a lien over any honey that might eventuate. A Wotjak peasant of the late 19th century might ' own ' in this way upwards of a hundred honey trees distributed over a wide area of forest. Similar conditions obtained in parts of medieval Europe as we know from ' the numerous legal provisions about the disputes over swarms and the hunting of wild bees ' mentioned by Bolin,[17] as well as from the importance of ' bee-forests ' as sources of taxation.[18] In wooded country the wild bee commonly nests in holes made in trees by wood-peckers and other natural agents, so that in the normal way it would be necessary to remove some of the trunk to get at the honey. The Finno-Ougrians improved on nature to the extent that they enlarged such holes in trees frequented by wild bees, closing them by a pair of boards, one perforated to allow the passage of bees ; then when autumn came one of the boards could be removed allowing honey to be extracted with ease.[19] Another indication of the somewhat sophisticated stage of wild honey collection among the Finno-Ougrians is to be seen in the elaborate climbing stirrups with sharp metal hooks, by means of which the hunter could haul himself up trunks giving scanty foot-hold. A definite step towards control had been taken in areas where wild bees were habitually lured to trees previously prepared by the cutting of artificial holes, duly covered over with boards : bees enticed by honey to take up residence in trees thus dealt with were well on the way to domestication. Finally, among some communities, regular ' bee gardens ' were formed by concentrating a number of timber ' hives ', each formed by a section of tree trunk treated in the same way and commonly provided with a small roof. By forming such ' bee gardens ' close to human settlement

[16] I. Manninen, *Die Finnisch-Ugrischen Völker* (Leipzig, 1932), 215–17, and 243–4.

[17] *Cambridge Economic History of Europe*, I, 483. An example of such a dispute is that in which the people of the city of Riga were involved with the Livs in 1349 over the ownership of honey trees.

[18] e.g. in 15th century Lithuania. See Rutkowski, ibid, 409.

[19] Sufficient would be left for the winter. Any that remained would be collected in the spring.

long journeys were avoided and the bees themselves brought under increasingly close control.[20]

On the general question of the origin and diffusion of apiculture, the antiquity of the art can be proved for Egypt, and is rendered likely for Mesopotamia by the fact that the wild honey bees are known to have flourished in neighbouring regions during antiquity.[21] It would seem a fair assumption that apiculture spread from the early centres along with other elements of settled civilization. On the other hand we may assume that the collection of wild honey had long been practised over the regions into which the arts of higher civilization were diffused and it is at least arguable that ' intermediate ' stages, like those met with among the Finno-Ougrians, were due to contact between the two in areas on the fringe of settled civilization. The importance attached to bee-keeping in Classical times and its prevalence in peasant economies from the Dark Ages onwards both suggest that apiculture was deep-rooted in European economy. Moreover it seems unlikely that the quantities of bees-wax needed for *cire perdue* casting on a generous scale could easily have been secured from wild bees. On the whole it looks as though bee-keeping goes back at least to the Bronze Age in Europe.

In conclusion it is perhaps worth reflecting that the nature of early settlement and land-utilization in prehistoric Europe was pre-eminently such as to favour the production of honey. There is an old saying that where there is good wool there also will be found sweet honey. In view of the prodigious number of flowers necessary to produce any quantity of honey it is evident that a landscape given over very largely to pastoral activities will tend to favour bees as opposed to one heavily cultivated.[22] Viewed in this light the biblical description of Palestine as a land ' flowing with milk and honey '[23] falls into line with Strabo's assertions that among the products of Brundisium the ' honey and wool

[20] Strabo must have been referring to hives like those in use among the Finno-Ougrians when he wrote that ' In Hyrcania . . . bees have their hives in the trees, and honey drips from their leaves '. Similar hives were said to have been in use in Media and Armenia. *Geography*, II, i, 14.

[21] See note 20. Strabo also refers to the bitter honey of Colchis. *Geography*, XI, ii, 17.

[22] It should be remembered that fodder-crops like clover played a very minor role in prehistoric times.

[23] Equally significant is Isaiah's reference (VII, 15, 22) to a diet of curdled milk and honey, symbolizing invasion and the conversion of agricultural into pastoral districts.

are among those that are strongly commended',[24] that 'wax, cheese and honey' were among the main products exchanged by the people of the Alps for the necessaries of which they were short,[25] and that Attic honey, more particularly that from the slopes of Mount Hymettus, is rated 'the best in the world'.[26] The fact that comparatively little ground was given over to the plough and that wide pasturages and extensive woodlands made up the bulk of the countryside resulted in ideal conditions for bee-keeping of an elementary order. In this way, through the activities of bees, the pastoral background of Bronze Age Europe helped materially to fashion the most characteristic products of the period. Which tell us more, the bees or the bronzes? A question-begging question. In the study of any society, past or present, no aspect can safely be omitted, for all are interdependent.

[24] *Geography*, VI, iii, 6.
[25] ibid. IV, vi, 9.
[26] ibid. IX, i, 23.

Sigurd in the Art of the Viking Age

by Hilda R. Ellis

THE youthful adventures of Sigurd the Völsung, before his fateful meetings with Brynhild and the sons of Gjuki, have given plenty of opportunities for argument and the weaving of contradictory theories. To some it has seemed that here we find ourselves with the tangled remains of a myth; to others that we are dealing with the elaborated version of a widespread folk-tale. The complex series of hypothetical lays and sagas traced out by scholars to form the ancestry of the Old Norse version of the story has become a spider's web of bewildering possibilities, a rather depressing prologue to what at first sight seems merely a rousing story of a young hero who kills a dragon. The question of literary antecedents and the problems of textual history have been fully and ably followed up, particularly by Heusler and Schneider; in this brief study I intend to approach the subject from a different direction.

None of the Old Norse or German versions in their present form go back earlier than the 13th century. *Reginsmál* and *Fáfnismál*, which contain most of the information about Sigurd's youth, have been preserved in the *Codex Regius*, a manuscript collection of poems. The compilation of the collection was in all likelihood done in an earlier manuscript, but this is not generally thought to go back further than the beginning of the 13th century, although some of the separate poems are unquestionably a great deal earlier. Snorri's *Prose Edda*, which contains a brilliant summary of the story, and the main German source, the *Nibelungenlied*, are recorded in manuscripts of the same period. The *Völsunga Saga*, a collection of tales from the history of the Völsung family in the form of one continuous narrative; the German ballad, the *Seyfridslied*; and the prose *þiðrekssaga*, a mixture of Norse and German material said to have been put together by Germans in Norway, are all generally thought to have been composed in the thirteenth century, although the form in which they have come down to us is in each case some centuries later in date.

It is obvious that much of the material in these different works belongs to a much earlier time. The fact that in the Anglo-Saxon

Fig. 1. CROSS SLAB, JURBY, ISLE OF MAN
after Kermode

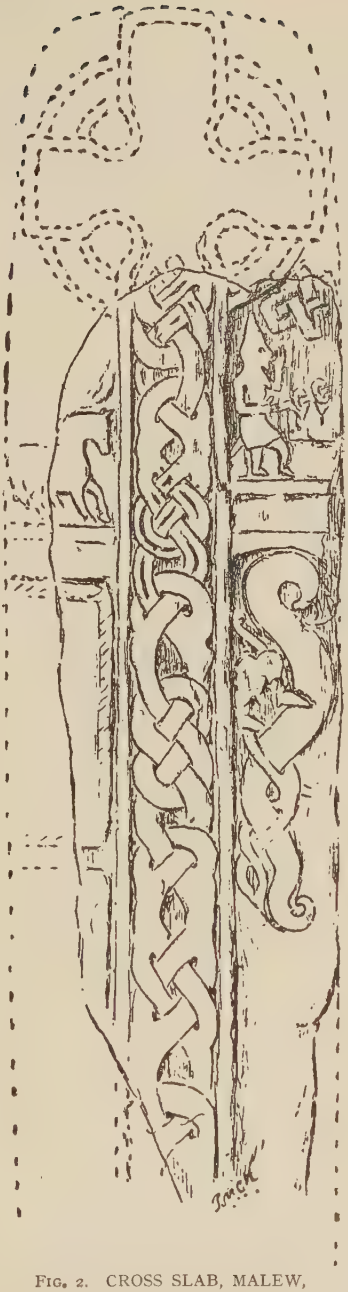

Fig. 2. CROSS SLAB, MALEW, ISLE OF MAN
after Kermode

poem *Beowulf*, generally accepted as being of 8th century date or even older, complete familiarity is shown with the adventures of Sigmund (father of Sigurd in the Norse and German versions) gives some idea of how early certain features of the story may be. The problem is to decide which are the original features of the story, and how early it may be supposed to have reached its present form, and to have been incorporated into the great Völsung cycle.

In the British Isles and Scandinavia there are a number of illustrations from the story of Sigurd, carved in wood and stone. Although a good deal of attention has been paid to these, it has been from the point of view of their significance as works of art, and not as possible evidence for the form of the story known several centuries before the existing manuscripts. The question of the relationship of the Swedish stones, in particular those of Gök and Ramsund, the carvings of the Norwegian stave-churches, and the stones in the British Isles, all of which depict scenes from the story of young Sigurd, is one which I can hardly hope to enter into here, at a time when necessarily cut off from any study of the originals in Scandinavia, and from any recent work done on the subject there. However whether Schück[1] is correct in deriving the Swedish stones and Norwegian wood-carvings from art-forms introduced from England, or whether, as Miss Seaver[2] believes, the whole series of illustrations is essentially Scandinavian, developing naturally out of the art of the Migration Period, the fact remains that in Lancashire and the Isle of Man we are confronted with a collection of scenes from the story of Sigurd of unquestionably Viking Age date.

We will begin with the Manx stones.[3] On the remains of a cross-slab from Jurby (FIG. 1), the small figure of a man is shown stabbing a dragon; since the dragon fits vertically against the upright cross-shaft, the little figure is shown at its side, but the intention seems to be to depict the hero attacking it from below. Underneath there is a scene where a figure stands with his thumb in his mouth, while his free hand holds a long pole with something on the end of it. Beneath him again is an animal, presumably a horse, and below this again a mass of tangled lines, difficult to interpret.

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[1] H. Schück, ' Sigurdsristingar ', *Nord. Tids. f. Vetenskap*, 1903, p. 217 f.

[2] E. I. Seaver, ' Figure Sculpture on Scandinavian Crosses in the Isle of Man ', *Konsthistoriska Stud. till Johnny Roosval*, 1929, p. 109 f.

[3] P. M. C. Kermode, *Manx Crosses*, 1907, p. 174 f; *Journ. Isle of Man Nat. Hist. and Antiquarian Society*, 1910, IV, 60–8. The Editors of ANTIQUITY wish to thank the Manx Museum for lending the blocks illustrating Figures 1, 2, 3 and 10.

A broken slab found in the churchyard at Malew (FIG. 2) shows a man in a helmet stabbing upward at a much interlaced dragon with a sword ; the group is badly preserved but the main features are clear. Above is a figure in a pointed cap, with his thumb in his mouth, who

FIG. 3. SIGURD STONE, ANDREAS, ISLE OF MAN
after Kermode

holds a stick with two irregular rings strung on it, above some pointed and conventional flames. Yet a third slab, from Andreas (FIG. 3) again shows a helmeted figure, thumb in mouth, stooping over three pointed flames, holding a stick with similar rings on it ; the heads of an animal (? a horse) and a bird can be seen peering helpfully over his shoulder.

Below in a badly mutilated picture a figure can just be made out plunging a short pointed weapon into the twisted folds of what presumably represents a dragon.

There is clearly some connexion between these stones from the Isle of Man and the stone crosses at Halton, in Lancashire (FIG. 4).

FIG. 4. HALTON CROSS, LANCASHIRE
after Kermode

Here once more is a man with his thumb in his mouth, holding a long stick in front of him with three irregular rings on it, and beneath are vertical lines which must represent flames. Above this is a much stylized tree, with two birds perched on the branches. Below we find a new scene ; a little figure seated in what must be a smithy, since he wields a hammer and is surrounded by smiths' tools, among which two pairs of pincers and two enormous bellows can easily be distinguished.

Above him is a headless man, and a neat knot of twisted coils, which might possibly be intended for a dragon.[4]

A particularly interesting feature about these stones is that although certain scenes repeat themselves several times we do not seem to be faced with a case of simple imitation ; the treatment of the dragon-killing, for instance, is very varied, and while there is more resemblance between the pictures of the man by the fire, the figures and the arrangement of the group show considerable differences. The scattered scenes are found to be combined on two memorial stones of the early Christian period in Sweden.[5] The Ramsund carving (FIG. 5), the more skilfully executed of the two, has a runic inscription to the effect that it was

FIG. 5. RAMSUND STONE, SWEDEN
after Kermode

raised by Sigrid for the soul of her husband Holmger. The dragon now has been turned to good use, for he has become the ornamental border of the picture on which the runes are carved ; to be exact, there is more than one dragon, but the creature that chiefly concerns us is the one whose body forms the base of the picture, for a small but determined figure is kneeling below and plunging a sword right through its snake-like body. A tree with two birds on its branches can be clearly seen above, and a horse with what might be a chest on its back (though it might merely be a saddle) is tethered to it. To the left of this group is a seated figure, clumsily but vigorously portrayed, with enormous hands ; one is up to his head, with the thumb in his mouth, and the other clutches a curved stick with something on the end. Some

[4] Baldwin Brown, *Arts in Early England*, VI (2), p. 231 f.

[5] Schück, op. cit. 205 ; Kermode, op. cit. 172.

smiths' tools, including bellows, are scattered about, and in the corner of the picture is a headless man. Finally there is a small four-legged animal in the top left-hand corner. The Gök stone (FIG. 6) contains the same series of figures in the same positions, the only difference being that the figure to the left of the horse has not his thumb in his mouth, and instead holds in his left hand something that resembles a hammer ; the style of the carving is much more fantastic and crude, and the human figures in particular more like tadpoles than men. Schück is probably right in suggesting that this is a copy of the Ramsund stone, and the relationship between them is of quite a different order from that between the Manx stones discussed above.

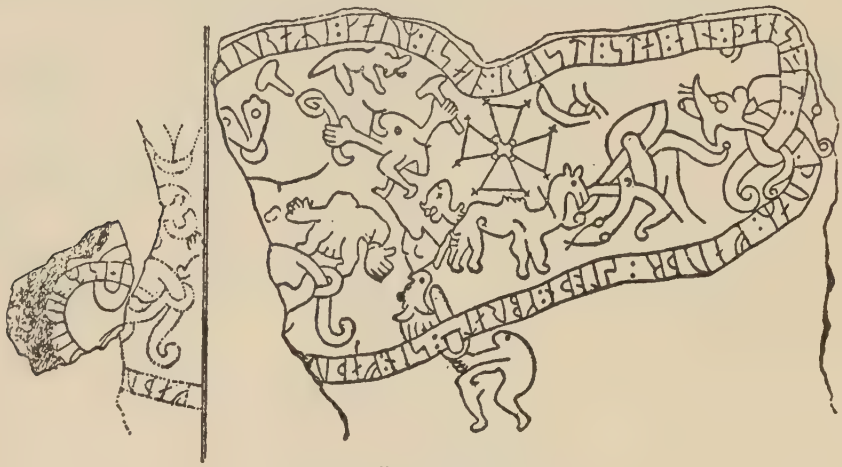

FIG. 6. GÖK STONE, SWEDEN
after Kermode

The wood-carvings from the Norwegian churches[6] are chiefly interesting because they enable us to make out the purpose of the scenes on the stones more easily. The carved panels from Hyllestad church (FIG. 7), for instance, have two very clearly defined scenes in a smithy ; in one a bearded man is hammering on an anvil while a younger man works the bellows, and in the other the same two figures are at work forging a sword. The scene with the youth working the bellows reappears at Veigusdal church (FIG. 8), and there the young

[6] H. C. March, 'Pagan-Christian Overlap in the North', *Trans. Lancashire and Cheshire Antiq. Soc.*, 1891, IX, plates 1–3. The Editors are indebted to the Lancashire and Cheshire Antiquarian Society for permitting them to reproduce the illustrations in their Journal for Figures 7, 8 and 9.

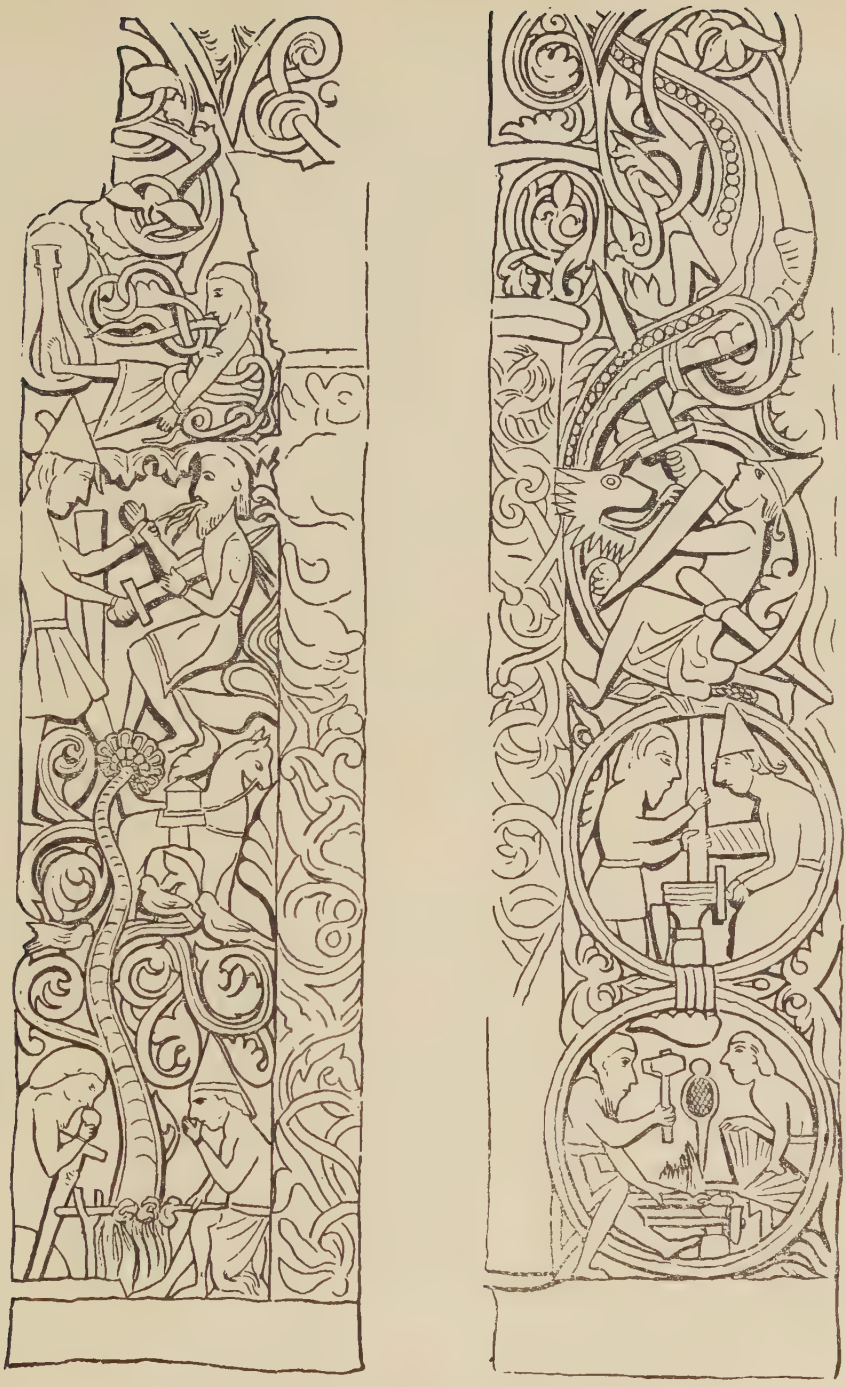

FIG. 7. CHURCH PORTALS, HYLLESTAD, NORWAY
after March

man is also seen alone forging (or testing ?) a sword ; at the church at Gaarden Gavelstad (FIG. 9) the smith appears alone, wielding his hammer. At Hyllestad and Gaarden Gavelstad these smithy scenes are accompanied by a picture of the stabbing of a dragon by a youth from below, a particularly spirited representation of this being given on the carving from Hyllestad. There in addition we find a scene where a youth in the usual pointed cap sits with his thumb in his mouth, roasting some slices of meat over an open fire ; this picture makes the scene on the Halton cross and the Manx stones more intelligible, and it is now clear that the rings upon the stick in these stone carvings are slices of meat on a primitive spit, held over flames. On the Jurby cross and the Swedish stone from Ramsund, however, the artist has chosen instead to represent one piece of meat only, held on a pointed stick. Opposite the youth busy with his cooking in the Hyllestad carving sits a warrior leaning forward on the hilt of his sword, while two birds appear above. A dragon's tail forms a background to the picture ; above is a horse with what seems to be a pack on its back ; and above again a scene where the youth in the pointed cap is stabbing another (seated) man with his sword, and streams of blood are seen to be issuing from the victim's mouth. The roasting scene is repeated on the Veigusdal carving, but here the youth is alone, with one bird perched on a tree behind him. The stabbing scene is also introduced, and a prancing horse is shown behind the hero when he stands at the anvil.

As to the dating of these stones, Collingwood[7] believes the cross at Halton to belong to the early years of the 11th century, not long after 1000. Kermode[8] dates the Manx stones considerably later than this, and is inclined to place them in the last quarter of the 11th century. Against this, however, must be set the arguments of Shetelig,[9] who, on the basis of the various Scandinavian art motifs employed on the stones, would insist on a much earlier date ; he would attribute Malew and Andreas to a period not long after 950, Jurby some time later, but certainly not long after the year 1000, and Ramsey to the first half of the 11th century. Shetelig's arguments, founded as they are on his wide knowledge of art-styles in Scandinavia, cannot be ignored. The objection to such early dating according to Kermode is that the Isle

[7] W. G. Collingwood, *Northumbrian Crosses*, 1927, p. 159 f.

[8] Kermode, op. cit. 179.

[9] H. Shetelig, ' Manx Crosses ', *Viking Club Saga Book*, 1915, IX (2), 253 f, esp. 271 f.

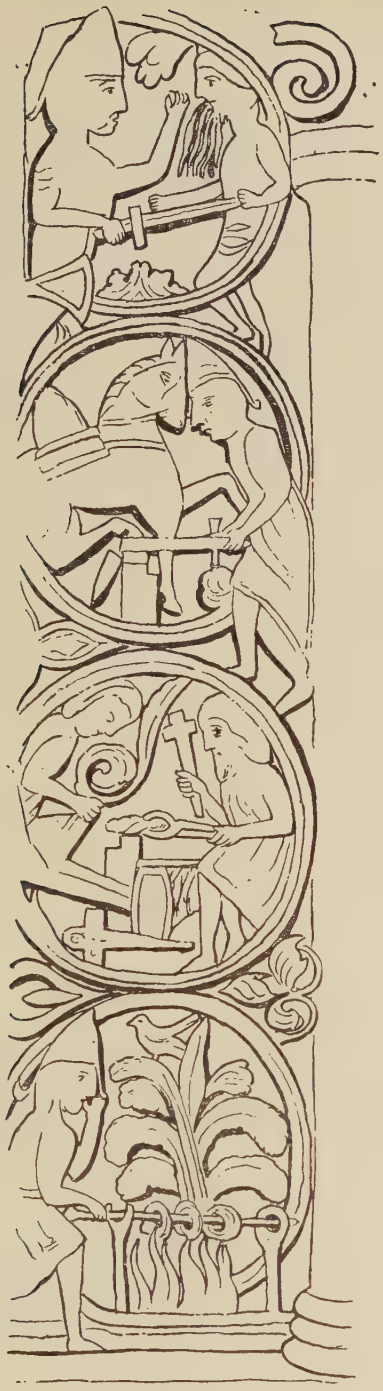

FIG. 8. CHURCH PORTAL, VEIGUSDAL, NORWAY
after March

FIG. 9. CHURCH PORTAL, GAARDEN GAVELSTAD, NORWAY
after March

of Man could not have been converted to Christianity by the first half of the 10th century, the period chosen by Shetelig for the first crosses in his series. We know little however of the early history of the Church in Man, and Collingwood[10] was of the opinion that it may have been in existence from the mid-10th century, in view of its nearness to England and Ireland, where Christianity had been known for centuries. Kermode dates one tombstone from Maughold, apparently of Anglo-Saxon work, as late 7th or early 8th century. The Swedish stones appear to be of 11th century date. The wood carvings from the Norwegian churches are of course later than the stones ; March gives the date of the Hyllestad carvings as 1150 and those from Veigusdal as between 1200 and 1250.

With regard to the dating of the carvings, there is an interesting piece of literary evidence to be noticed here, first pointed out by Schück. One of the poets attached to the court of Olaf the Holy, who ruled Norway in the early years of the 11th century, composed a verse which according to tradition was an impromptu stanza, produced at the king's command. *Flateyjarbók* (III, 9, p. 244),[11] tells us it was the work of a skald named Thorfinnr, and that it was to describe a scene depicted on the tapestry in the hall. This verse runs as follows :

Geisli stendr til grundar
gunnar jarðar munna
ofan fell blóð á báðar
benskeiðr enn gramr reiðiz.
hristiz hjörr í brjósti
hringi grœnna lyngva
enn folkþorinn fylkir
ferr við steik at leika.

This may be translated : ' The sword (ray of battle) stands in the pit (opening of earth). Down falls the blood from both its edges (? ships of wounds) on to the earth. The prince is wrath. The sword quivers in the breast of the dragon (coil of the green ling). Now the gallant leader amuses himself with the roasting '.[12]

[10] W. G. Collingwood, *Scandinavian Britain*, 1908, p. 232 f.

[11] Vigfusson and Powell (*Corpus Poeticum Boreale* II, 57) attribute it to Ottarr hinn Svarti, but I have not been able to discover any authority for this.

[12] *benskeiðr* is not satisfactory, and F. Jónsson, *Skjaldigtning*, B, I, 292, reads instead *baugs seiðs*. He takes *til munna grundar seiðs* together, and reads ' the sword stands in the mouth of the fish of the ground ' (i.e. dragon). But since *munna* must come from *munni*, opening, mouth of cave, etc. and not from *munnr*, the word used for the mouth

Note continued on page 227

There seems little doubt that here we have just such a pair of scenes described as are depicted on the Manx stones : the hero stabs the dragon upwards from a pit in one picture, while in the other he roasts the heart over a fire. We have therefore right to assume that the Sigurd illustrations were known to at least one Norwegian poet in the early years of the 11th century ; if the story in *Flateyjarbók* is correct, he met with them in the king's court. Schück[13] seizes on the reference to tapestries, and emphasizes the important part which they may have played in the dissemination of art-motifs, suggesting that the Sigurd scene may have been introduced into Scandinavia from the British Isles in this way. We have however no particular reason to assume that the hangings of Olaf's hall were imported from England, and it is quite likely that the story in *Flateyjarbók* may in any case have been added late in an attempt to explain the verse. This frequently happens in the later sagas, so that the possibility that it was originally a carving and not a piece of weaving which was the inspiration of the verse is not beyond the bounds of possibility. At all events the verse is a useful piece of evidence to prove that the two favourite scenes on the Sigurd stones were known soon after the year 1000 in Scandinavia.

Surveying the evidence for the Sigurd story in art, we see that a sequence of illustrations from it may be traced back over a period of between two and three centuries from the time of our written sources for the story. We find the smithy, where Sigurd's youth, according to the Edda poems and Snorri, was spent with Reginn the smith ; by the time of the Norwegian wood-carvings the forging and testing of the sword is clearly seen, but as early as the Halton cross the setting in the smithy is evidently of importance. We have also the stabbing of the dragon by the hero with his sword, and in all the different illustrations of this scene the death-stroke is dealt from below. This is in accordance with the account of the slaying of the dragon Fáfnir by young Sigurd in the Edda and Snorri, where Sigurd, directed by Reginn, awaits the dragon's return to his lair in a pit dug in his track, and then

Note continued from page 226

of man or animal, this hardly seems satisfactory ; both Jónsson and Vigfusson seem to have gone astray over this. Consequently I have not adopted Jónsson's reading, although *blóð fellr ofan á báðar baugs jarðir* is in itself a reasonable interpretation : blood falls down on both the arms of the warrior (grounds of rings). But in spite of difficulties in deciding on a detailed interpretation of the first four lines, the main picture is clear, and the reference to the ' mouth of earth ' especially striking in view of the stabbing from the pit in all the pictures of the dragon-slaying on the Sigurd stones.

[13] op. cit. 218 f.

stabs him from below. It is corroborated, as we have seen, by a piece of skaldic verse from the beginning of the 11th century. Very prominent in practically all the examples from the Halton cross onwards is the scene where Sigurd roasts the dragon's heart, burns his thumb, and finds when he puts it to his mouth that the juice from it gives him the power to understand the speech of birds. On the Halton cross two birds appear on the tree above, and by comparison with this we can trace the remains of a similar tree upon the Jurby slab, while one is clearly defined on the Ramsund stone. This is in full accordance with the literary versions of the story, in Snorri and in *Fáfnismál*. Finally the slaying of Reginn by Sigurd has not been omitted. This, according to the Edda and Snorri, takes place as the result of the promptings of the birds, who tell Sigurd that Reginn intends to kill him now that Fáfnir has been conveniently disposed of; whereupon Sigurd cuts off Reginn's head immediately. The Norwegian carvings show this in most vivid detail, but there seems little doubt that it is the explanation of the headless man who appears on the Swedish stones alongside the smiths' tools, and also the headless man shown in a similar position on the Halton cross. Schück's objection[14] that according to the Edda story the slaying of Reginn takes place on Gnítaheið and not in the smithy, and that this must therefore be a scene from another saga, is not a serious one. The method of illustration on these stones is certainly not that of accurate chronological sequence, and it would not be inconsistent for the artist, depicting Reginn, to be led on to remember a later episode and to add his headless body accordingly; but in any case it is a possibility that the slaying on the heath was not the original version, since in the *Þiðrekssaga* the hero returns and kills the smith Mímir inside his smithy. The horse we have seen to be a favourite subject on the stones, and although he does not appear on the Halton cross he is prominent on the Manx and Swedish carvings. In Snorri and the Edda the choosing of Grani forms an important prologue to the expedition against Fáfnir, and after Sigurd has won the treasure he loads it in packs on the horse's back and rides away, since the admirable creature stoutly refuses to let his master walk in spite of the weight of the gold he carries.

There are some additional scenes from the stones which should be mentioned at this point. One of the Manx stones which has not yet been alluded to, that from Ramsey[15] (FIG. 10), judged by Kermode to be rather later than the rest and probably of 12th century date,[16] has

[14] Schück, op. cit. 199. [15] Kermode, op. cit. 178. [16] ibid. 179.

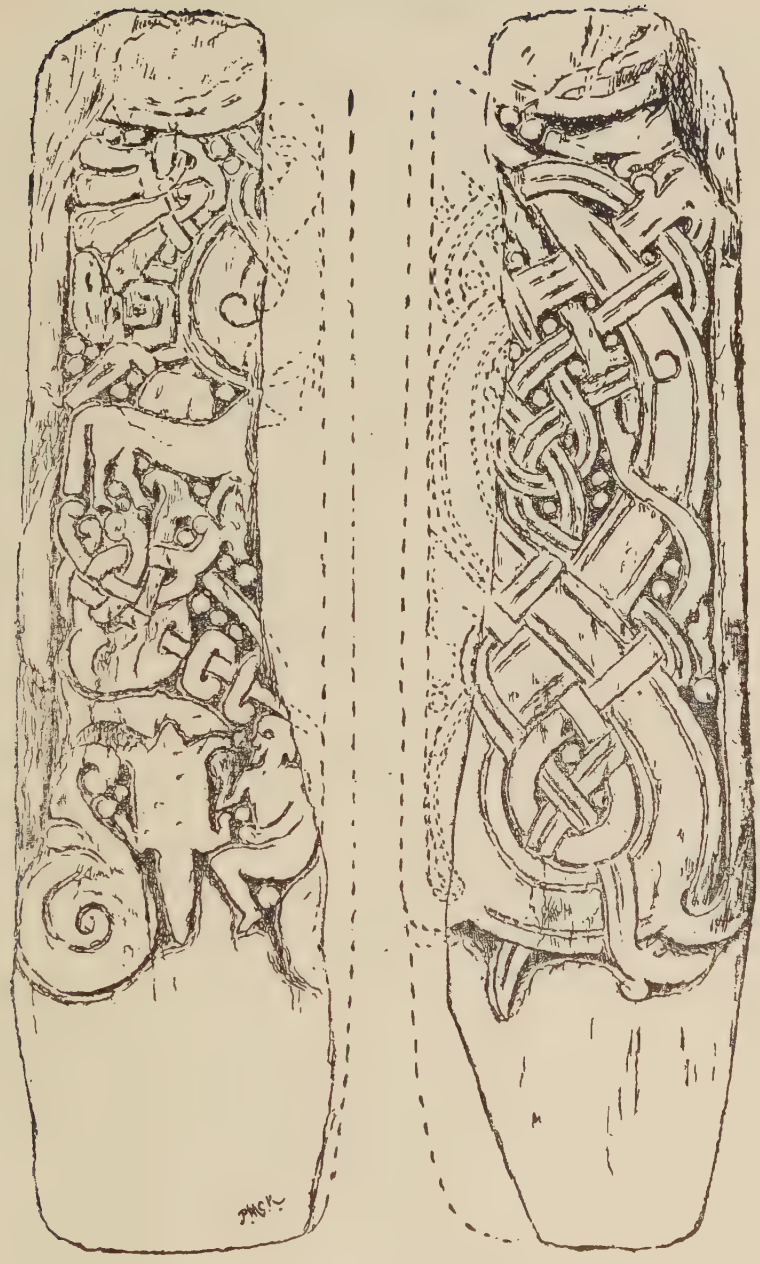

FIG. 10. SIGURD STONE, RAMSEY, ISLE OF MAN
after Kermode

certain resemblances to the other Sigurd stones. It shows a horse with what seems to be a pack on its back, and beneath it, in a collection of complex interlacings, a stick with rings on it that is very close to the usual illustrations of a roasted heart. But most striking of all is the scene at the base, where an animal with short legs and a wide flat tail is shown eating a fish. On one side squats a naked man, more skilfully portrayed than most human figures on these stones, with his hand raised and the fist clenched as though holding something. It is always a temptation to read into these often vague and ambiguous pictures one's favourite scenes in saga literature—a temptation which has proved too strong for a number of scholars—but the resemblance between this picture and the story told by Snorri Sturlason in his *Skáldskaparmál*, and given in the prose introduction to *Reginsmál*, is surely too striking to be rejected. Here, while the gods are wandering one day in search of adventure, they come upon a water-fall, on the edge of which an otter is peacefully devouring a fish he has just caught. Loki, thinking of his supper, hurls a stone at the beast, and so catches fish and otter at one blow. Unluckily the otter has a family of some importance in the background, and Loki's chance shot is the beginning of all the trouble with the kindred of Hreiðmarr. It seems too much of a coincidence to suppose that this is not a picture of Otr eating his salmon and Loki, stone in hand, aiming at him. This is moreover strengthened by the fact that in one of the Norwegian carvings, that at Gaarden Gavelstad, there is a picture of the otter-skin stretched out over the heap of gold ; for this was the ransom demanded by the father of Otr from the Æsir. It has been suggested that the unidentified little animal on the Swedish stones might also be the otter, and this may be so, although there is no striking resemblance in this case.

A second scene which appears several times is that showing a man bound and surrounded by snakes. On the second face of the Andreas stone (FIG. 3) a man in a peaked cap has his wrists and ankles fettered, and there are a number of serpents around him, one of them apparently biting his shoulder. On the carving at Hyllestad the same scene is shown above that where Sigurd kills Reginn, and here the bound man attacked by the snakes is clearly shown playing a harp with his feet. A stone font from Norums church and a carved wooden bridal bench from Hiterdale church show him again with his harp.[17] It would seem that we must be dealing with the same story as that

[17] E. I. Seaver, ' Some Examples of Viking Figure Representation ', (*Medieval Studies in memory of A. Kingsley Porter* (Harvard Univ. Press, 1939), II, 603, 606).

related by Snorri, who tells how long after the death of Sigurd Gudrun's brother Gunnarr is put to death by king Atli. Gunnarr is placed in a snake-pit with his hands bound, but so skilful is he with his harp that he plays on it with his toes, and the music keeps the snakes spell-bound until the old mother of Atli, in the form of an adder, creeps up and kills him. This is noteworthy as being the only scene from the Burgundian section of the Völsung cycle, and outside the story of young Sigurd, which is carved on the stones.

It has, however, been suggested from time to time that one or two additional stones ought to be included in the list of Sigurd carvings. A stone discovered by Collingwood in Iona,[18] which seems by the style of its carving to belong to the same series as the Manx stones, shows a ship containing six little figures and a much larger one with hammer and tongs, forging a sword. Above, Collingwood makes out the folds of a dragon—though from his drawing this is rather hard to see—and suggests that a little four-legged creature to the right might be an otter. He thinks the stone may originally have been the memorial stone of Godred, king of Man, who was buried in Iona in the 12th century. It would certainly be pleasant to identify the smith with Reginn, and to interpret the picture as that of the journey made by Sigurd with his foster-father ; we know that there was a tradition that they went over the sea, and that Othin came aboard to instruct the young hero, for this is preserved in Snorri and *Reginsmál*. But except for the forging of the sword we have no real evidence to allow us to assume that this scene is connected with the Sigurd story, and neither the dragon nor the otter are definite enough to be conclusive. Nor can much help be gained from another slab found in the Isle of Man after the publication of Kermode's book on the Manx crosses.[19] This shows a tethered horse, with what looks like a load on its back, which may, by analogy with other carvings, be Grani. It also shows the figure of a woman in a long robe, with her hair falling in a stiff plait and a staff in her hand ; this is clearly connected in some way with two figures on a slab from Jurby which closely resemble it,[20] though unfortunately the stone is incomplete and one of them is headless. It has been suggested that they represent Hyndla, but no real reason is given for this, and the possession of a staff is certainly not enough to establish identity.

[18] Collingwood, ' Viking-Age Cross at Iona ', *Viking Club Saga Book*, 1904, p. 304 f.

[19] Kermode, *Viking Club Saga Book*, 1925, p. 333 f. Seaver, op. cit. 597, fig. 10.

[20] Kermode, *Manx Crosses*, pl. XLVIII, XLIX.

A good many attempts have been made to discover scenes from the Sigurd story on other works of art in England and Scandinavia. But none of these is particularly convincing, and to accept would weaken considerably the evidence of the Halton cross and the Manx stones, where the details are too clear for mistake. The various Swedish stones cited by Schück[21] contain scenes where a conventional dragon-border is stabbed through from below by a figure with a sword, in the manner of the Ramsund and Gök stones, but the little men holding rings and the like are too vague to be accepted as belonging to any part of the Sigurd story. Nor does there seem to be any valid reason why the man with a bird on the Leeds cross (a frequent Christian motif) should be identified with Sigurd.[22]

Two attempts in particular have been made to discover illustrations from the Sigurd Saga of a much earlier date than the stones and carvings discussed above—one from Anglo-Saxon England and one from Scandinavia. It would be of the utmost importance for our knowledge of the early history of the story could either of them be proved to be correct. The first aims at recognizing a scene on the Franks casket (FIG. 11), the carved ivory box generally taken to be a product of the Northumbrian Golden Age, and to be of eighth century date.[23] On the right side of this is a curious scene in which a horse stands hanging his head in the centre of the picture ; to its left a man or woman with a horse's head sits on a mound, and between the two is an armed and helmeted warrior, facing the seated figure. On the right of the horse is a mound (or hall ?) with what may be a little figure lying inside, and beyond this again a woman with a staff. The runic inscription, which is unique in that it uses special vowel symbols not found elsewhere, is obscure : it seems to run to the effect that someone (name not clear) sits on the sorrow-hill with sorrow and anguish of heart ; but there is no unanimous agreement as to the interpretation. The sole line of argument for taking this to be a scene from the Sigurd saga is that a Norse poem, some centuries later in date,[24] happens to

[21] Schück, op. cit. 206 f.

[22] As suggested by Baldwin Brown op. cit. VI (2), 238. But see Collingwood, *Northumbrian Crosses*, p. 162–3 ; and for examples of the man and bird in Christian symbolism, March, op. cit. 64 f, and pl. VIII.

[23] Baldwin Brown, op. cit. VI (1), 135 f, accepts the interpretation of the scene as being from the Sigurd saga. Objections to this are raised by A. S. Napier, ' Contributions to O.E. Literature, Eng. Misc.presented to Dr Furnivall ' (Oxford, 1901), who gives the fullest and most helpful survey of the problems of the runes.

[24] *Guðrunarkviða* II, 5.

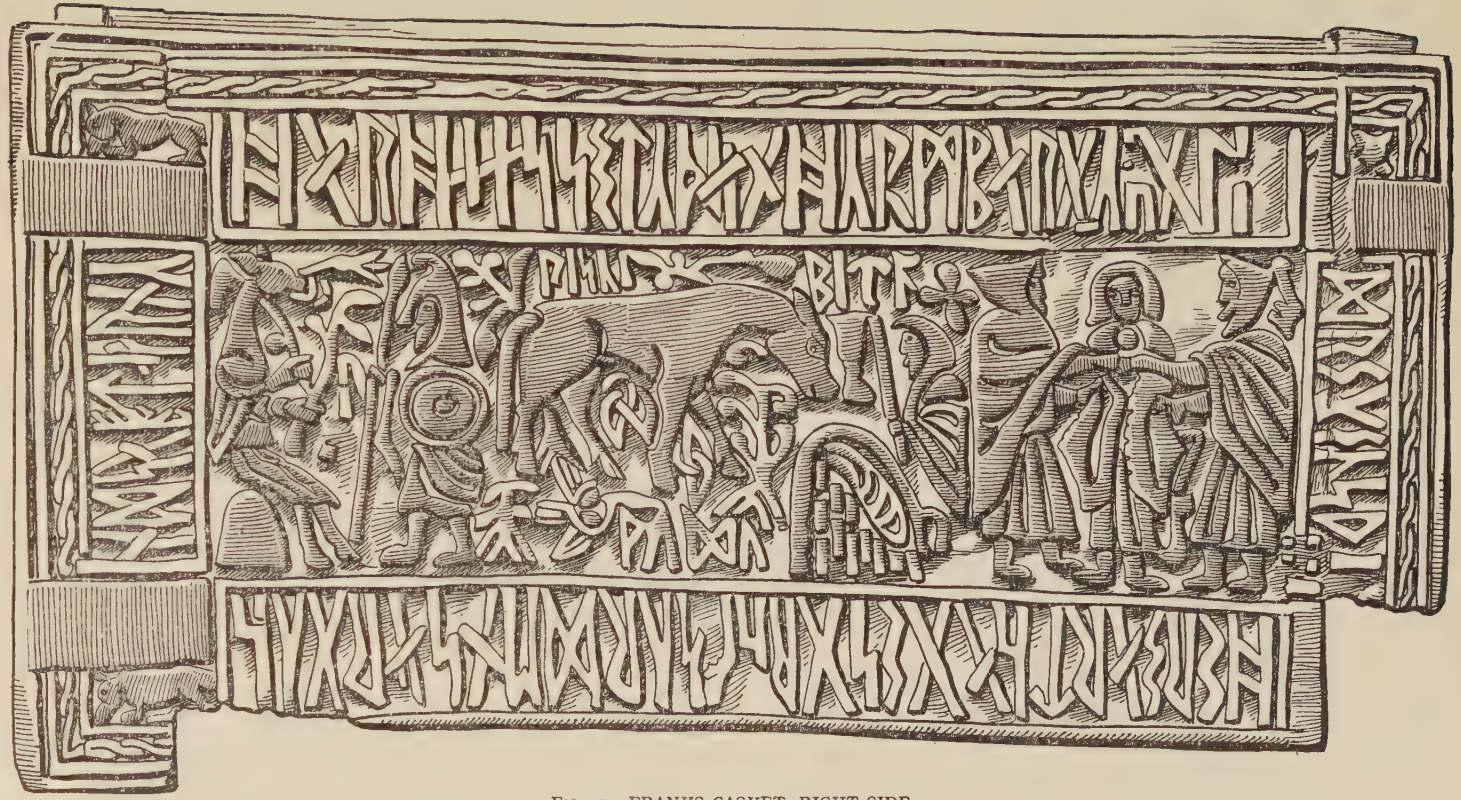

FIG. 11. FRANKS CASKET, RIGHT SIDE

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mention that the horse Grani hung his head in grief over his dead master when Sigurd had been slain. Admittedly the horse on the casket is hanging his head, and if the rounded hill is assumed to be a burial mound containing a dead occupant, it is possible that he is depicted mourning over it; but although the parallel so far is interesting, it is hardly sufficient to explain the rest of the scene, or the mysterious inscription which gives no suggestion of the Sigurd saga. And if we are to rely so faithfully on Edda tradition, it is as well to remember that there Sigurd is cremated, not buried, and that it is on his return to the hall and not over his master's grave that Grani is represented as hanging his head.

There is possibly more significance in the parallel noted by Schück[25] between the front of the Franks casket and the smithy scene on the Halton cross, repeated on the Swedish stones. Here again we find a man surrounded by smiths' tools, and a headless body lying on the ground; the presence of women and the man strangling birds outside have led to identification with the legend of Weland as told in the Norse poem *Völundarkviða*. Although we have to turn to the Norse for a detailed account, we see from *Deor* that it was known in Anglo-Saxon England. Schück believed that the Viking Age sculptors in the British Isles brought the Weland scenes into the illustrations of the Sigurd saga, and that this explains the resemblance, but in this case it is hard to account for the continued popularity in so many carvings over so long a period of the smithy scene, and the fact that the tradition of the upbringing of Sigurd by a smith, whom he subsequently kills, is deeply rooted in both German and Norse literary tradition. It is possible however that the resemblance struck the man who carved the Halton cross, and influenced his arrangement of the figures. The stone from Iona, where the smith is shown on board ship, proves that it was possible for an artist to depict such a figure without necessarily thinking of the Weland saga.

The second direction in which attempts have been made to discover early illustrations of the Sigurd story is from the gold bracteates found in Scandinavia which date from the Migration Period between the 5th and 7th centuries. Worsaae[26] put forward the suggestion many years ago that they depicted scenes from the story of Sigurd,

[25] Schück, op. cit. 196 f.

[26] J. A. Worsaae, *Om Forestillingerne paa Guldbracteaterne, Aarb. f. nord. Oldkind*, 1870, p. 382 f.

and recently Miss Seaver[27] has emphasized their importance as foreshadowing the later Sigurd figures on the Manx crosses and the Swedish stones. On the subject of the bracteates I do not feel qualified to give an opinion, particularly as it is not possible to get into touch with recent work done in Scandinavia or with collections of illustrations other than that given by Worsaae, but his series does not seem to me to be conclusive as it stands. It is true that some of the bracteates depict a dragon fight, and others a man surrounded by twisted coils that might be serpents ; his most interesting examples[28] show a helmeted warrior with his hand raised to his face and with a bird above him and a barbaric beast at his side. None of the figures however appears to have his thumb definitely in his mouth, and Worsaae has perhaps been misled by the invariable habit of the artist to show the hand with the thumb protruding at a right angle from the fingers. Nor is the man among the snakes, whom he presumes to be Gunnarr, playing a harp with his feet. As early examples of Scandinavian figure-representation, the bracteates are invaluable, but as evidence for the knowledge of the story of Sigurd in the Migration Period they are of little assistance.

But even without the evidence of the Franks casket and the gold bracteates, we have sufficient material from the various representations of the Sigurd story in art to make an important contribution to our knowledge of the story before it was recorded in the 13th century manuscripts which have preserved it for us. The series of incidents which make up the story of young Sigurd in the Norse version—his connexion with a smith, slaying of a dragon, roasting its heart, the resulting discovery that the juice of it on his tongue gives him an understanding of bird speech, and finally his killing the smith at the birds' instigation—these we now realize must have been known in the British Isles by the beginning of the 11th century; according to Collingwood's dating, soon after the year 1000, and according to Shetelig half a century before that, while they appear in Sweden not very much later. One Manx stone gives us reason to believe that by the 12th century, if not earlier, the story of the otter and the gold was also included in the cycle. We have no evidence however, that any further incidents to be found in the full literary version of the story of Sigurd the Völsung were linked with this tale of his youth so early ; and neither the meeting with Brynhild nor the treacherous slaying of the

[27] Seaver, op. cit. 113 f. and *Medieval Studies* (see note 17), p. 590.

[28] cf. Du Chaillu, *Viking Age*, II, 340, figs. 1307, 1309.

hero by the brothers of Gudrun ever appear side by side with the scenes depicted in the carvings. The only striking exception to this is the death of Gunnarr in the snake-pit; this appears apparently on one of the earliest of the Manx stones, and would seem therefore to have some special connexion with the story of young Sigurd, although in the literary accounts Gunnarr's death takes place at the court of Atli, Guðrun's second husband, long after Sigurd has been slain. It is of course possible that this incident of the hero dying among snakes originally occupied a different position in the cycle. It will be remembered that there is continual connexion between snakes and members of Sigurd's family. Ragnarr Lóðbrok, whose second wife was Sigurd's daughter Aslaug, began his career like Sigurd by slaying a dragon, and is said to have met his end in a snake-pit at the court of king Ella of Northumbria.[29]

The importance of our evidence for the early history of the story of Sigurd lies in the fact that we are entitled to assume from the carvings on the Halton cross and the Manx stones that the set of incidents making up the story of young Sigurd were not only known from the beginning of the 11th century in the British Isles, but that they were by that time connected into one story. The question of how long they had been linked together before this is perhaps the most tantalizing of the many problems which the subject raises. Could we only rely on the Franks casket affording us evidence for the knowledge of the story in Anglo-Saxon England in the 8th century, the position would be far more satisfactory. But at least the evidence which the crosses provide is both relevant and valuable for the student of literature as it stands. There is continual disagreement as to which portions of the story were added later, (whether, for example, the incident of the smith is genuine old tradition), and the fact that we find a certain series of illustrations linked here enables us to lay hold on something sufficiently definite to afford welcome relief among a mass of theories and hypotheses. I hope shortly to follow up this introductory study by a detailed examination of the literary evidence from Scandinavian and German sources, in the light of the information derived from these Viking Age works of Art.

[29] 'Ragnars Saga Lóðbrokar', *Fornaldar Sögur Nörðlanda*, xv. The reference to the hero's death among snakes is found in a verse, and is the more likely to be a genuine old tradition.

The Book of Aneirin

by Colin A. Gresham

THE Book of Aneirin,[1] which contains all the verses that go to make up the *Gododdin*, is a manuscript written on vellum about the year 1250. It is incomplete, ending at the bottom of folio 38 and at least three or four folios are missing. The condition of the manuscript suggests that the existing folios have been re-arranged. The various later copies of the poem on paper are not worth further study, for they are not evidence of better texts, but of the carelessness of copyists. The manuscript is in two different handwritings, which may be called A and B. The body of the work is in A and was written first. As well as the *Gododdin* verses, it contains four other poems, the last of which is attributed to Taliesin. The verses in the second handwriting B were added afterwards on the empty pages of the manuscript, and are nearly all variant versions of ones already given in A.

The particular interest of the B text is that it is full of linguistic forms in an orthography known to have existed in the 9th and 10th centuries, as it is to be found in glosses of that date. This shows that the writer worked from a far older text[2] than that copied by the first man whose version he had tried to augment and correct by adding variants. He altered all that he understood to the orthography of his own time, but occasionally he forgot, or else failed to grasp the meaning of his original, and so left it as he found it. The text in B is more reliable and correct than the main portion in A. Moreover it proves that the *Gododdin*, in part at least, was known in the 13th century in a manuscript in the orthography of the 9th or 10th century.

[1] This paper is a précis of the Introduction to Professor Ifor Williams' book *Canu Aneirin*. This book was reviewed by Kenneth Jackson in Antiquity for March 1939 and, as it is in Welsh, he dwelt at some length on the most important points of the Introduction. However, the great value of the subject seems to justify a fuller treatment. Accordingly the following pages have been prepared, although they have not been published without first passing through Professor Ifor Williams' hands and I wish here to thank him most gratefully for allowing me to use his material in this way and for a number of helpful corrections.

[2] Professor J. Loth goes further and says that the kernel of the *Gododdin* goes back to the 7th century, although the form which has come down to us is not older than the 9th.

Aneirin

The date of the earliest reference to the bard is A.D. 1100, at which time Harleian 3859 was written. The material of this is composite. It contains the *Historia Brittonum* of Nennius, the *Annales Cambriae*, and a set of pedigrees to explain the two. The *Annales* end in 954 and that is the date at which the pedigrees were collected. The *Historia* is itself a collection of essays, giving the history of the Britons. One of the essays is known as the *Saxon Genealogies*. It comes from a Saxon original and is dated to the 7th century by Zimmer. It was included in the *Historia* to give a background to the general story. The *Saxon Genealogies* have themselves received additions in the form of notes on the British kings who fought against the Saxon kings therein mentioned. Some of these notes come from Welsh sources, either written or oral. They may have been added by Nennius when he was editing the essays about 800, or, if they already existed in his time, they were added by a man who was a North Briton and knew the nicknames of the enemies of his race, such as *Flesaur* (i.e. *ffleisaur*, Full-of-Tricks, Artful Dodger) for Ethelfrith. In these notes, after the reference to Ida, king of Northumbria 547–559, comes the following passage :

> (T)unc dutigirn in illo tempore fortiter dimicabat contra gentem anglorum. Tunc talhaern tat aguen in poemate claruit. et neirin. et taliessin et bluchbard. et cian qui uocatur gueinth guaut. simul uno tempore in poemate brittannico claruerunt.

which may be translated and amended as follows :—

> At that time Outigirn (Eudeyrn) was fighting bravely against the Anglian race. Then was Talhaearn, Father of the Muse, famous in poetry ; then also Neirin, Taliesin, ' Bluchbard ' and Cian, who is called *Gwenith Gwawd* (the Wheat of Song), all at one time were famous in British poetry.

The name here spelt as Neirin became later Aneirin, for Welsh words beginning with n- sometimes took an initial a-.

The *Saxon Genealogies* also say that four kings, Urien (Urbgen), Rhydderch Hen (Riderch hen), Gwallawg (Guallanc) and Morgant (Morcant) fought against Hussa, the son of Ida and, later, that Urien and his sons fought against Deodric, another son of Ida. In the Book of Taliesin, which is a little later in date than the Book of Aneirin, there occur several poems addressed to Urien, Owain ab Urien and Gwallawg. These poems are attributed to Taliesin and they have been studied by

Sir John Morris-Jones, who gave it as his judgment that they were genuine 6th century compositions of that bard.[3]

We have then in Harleian 3859 the record of a tradition, which is substantiated by the work of Sir John Morris-Jones, that the bards Neirin and Taliesin lived and composed about the end of the 6th century. This tradition forms part of the *Historia Brittonum* and, whether it was added by Nennius himself or was already in his material, it must have been in existence before 800. Now it has been shown that a part at least of the *Gododdin* must have existed in a manuscript of the 9th or even 8th century. This might have been the work of a poet of that period, who wished to pass it off as a poem of the earlier bard Aneirin, who must in that case have been well known to him and his contemporaries. But this would seem to be a pointless type of forgery, for the *Gododdin* is not a prognostication and it is more reasonable to believe that it is in the main an ancient composition and the work of the bard Neirin, the contemporary of Taliesin and Urien at the end of the 6th century.

The Gododdin

The rubric at the top of the first page of the Book of Aneirin is *Hwnn yw e gododin. Aneirin ae cant.* 'This is the *Gododin.* Aneirin composed it'. The orthography of the name is ambiguous, because -d- in this manuscript is used for both -d- and -dd-. Until recently the poem was known as *Y Gododin*, but comparative forms of the name have shown that it should be *Y Gododdin.* (The -dd- pronounced as a soft -th-.)

The 2nd-century geographer Ptolemy, mentions a tribe in the north of Britain called *Otadenoi* (or *Otadnoi*, *Otalinoi*). He places them to the north of the *Brigantes*, who lived in the modern Yorkshire. The Welsh form of the name shows that a letter has been lost at the beginning of Otadenoi and that the vowel in the penultimate syllable should be -i-, not -e-. Thus from an original Brythonic form *Votadin-i*, which would be written by Ptolemy in Greek letters as *Ouotadin-oi*, there would come, wholly according to rule, the Old Welsh *Guotodin* and by later evolution *Gododdin.*

In Harleian 3859 there is a list of the sons of Cunedda. The eldest is called Typipaun, (an error for Typiaun), of whom it is said that he died in the country 'which was called *manau guotodin*, and

[3] Sir John Morris-Jones, 'Taliesin', *Y Cymmrodor*, XXVIII. The greater part of the poems in the Book of Taliesin are of a much later date than the so-called Historical Poems.

did not come here (that is to Wales) with his father and brothers'. This fragment, like the last, is an addition to the *Historia Brittonum* and was inserted to explain the following reference to Maelgwn Gwynedd.

'Mailcun, a great king, reigned amongst the Britons, in the land of Gwynedd, for his ancestor, Cunedag, with his sons, eight in number, came formerly from the country which is called *Manau Guotodin*, 146 years before Mailcun reigned, and drove out the Irish with great slaughter from those lands and never returned thither again to dwell therein.'

The pedigrees say that Maelgwn was the great-grandson of Cunedda. He lived at the same time as Gildas in the second quarter of the 6th century, which agrees with the dating of the arrival of Cunedda in Wales at the end of the 4th or the beginning of the 5th century. Cunedda came from *Manaw Gododdin* and was one of the tribe of *Gododdin*. He founded the royal line of Gwynedd and it may be imagined that some intercourse continued for a while between North Wales and the original country of the *Gododdin* in the north. If Aneirin composed a song of praise to the *Gododdin* in their home land about 600, there would be no better place for it to be kept in memory than in the court of the descendants of Maelgwn. There was little hope of its lasting for very long in the southeast of Scotland.

On the subject of the movement of Cunedda, Collingwood[4] says that a spontaneous migration of that sort was extremely improbable under Roman government, but that the transplantation of a tribe from one frontier district to another, to act as a local militia under its own king, was a commonplace of late Roman history.

This is an admirable solution of the Welsh tradition, but a study of the *Gododdin* poem suggests that the whole tribe was not moved from the north. It would have been indeed foolish to drain the whole country from Edinburgh to Durham of its fighters, leaving that same enemy who was to be driven out of Wales to move in there unhindered.

Collingwood's location of *Manaw Guotodin* is not correct. The Welsh name *Manaw* is the same as the Irish *Manann*. There is a reference to a slaughter of the Picts by the Saxons '*in Campo Manand*' and Skene[5] has shown that this is to be placed between the rivers now called *Avon* and *Carron*, where the name Slamannan has remained. Sir John Rhys[6] has also added the name Clackmannan as a further proof.

[4] Collingwood and Myres, *Roman Britain and the English Settlements*, 288–90.

[5] Skene, *The Four Ancient Books of Wales*, II, 366–7.

[6] Rhys, *Celtic Britain*, 152.

Manaw Gododdin was therefore near North Berwick and Edinburgh, and to the west of that city, on the banks of the Firth of Forth.

Those of the tribe who were left behind in their home country in the north must have known a century and a half of warfare before the arrival of Ida. If they succeeded in keeping their identity as a tribe and in holding their lands against the enemy until the time of Taliesin and Aneirin, it would only have been by valour and might in battle. If the *Gododdin* is a genuine work of Aneirin, it is only reasonable to expect it to contain a description of a ' border tribe ', of men skilled in warfare, accustomed to bloodshed, proud of their military prowess and above all delighting in bravery.

Gododdin was the name of the Tribe[7] and line 57 of the poem, *Gwyr a aeth Ododin* (the men went to *Gododdin*), shows that it also became the name of the country in which the tribe lived. *E Gododin*, *The Gododdin* is used as the title of the poem, and it is quite understandable that a song to the heroes of *Gododdin* should come to be called *The Gododdin* in the course of time. The name *Gododdin* occurs several times in the poem itself. In lines 27 and 551 it may refer to either the poem or members of the tribe.

To return to Cunedda ; he and his sons were of the tribe *Gododdin* and we have to decide whether Aneirin sang to his descendants, or to the men who remained in the north. A study of the people and places named in the poem shows that he undoubtedly sang to the men of the north. Moreover, though the names of the sons and grandsons of Cunedda still remain as the names of districts in Gwynedd, there is no district or place called Gododdin in Wales.

Summary of the poem

The Gododdin may be called an epic poem. It has no one Hero, but is addressed to the host of *Mynyddawg Mwynfawr*, to the men who went to *Catraeth*. Almost every verse brings forward a new name ; sometimes two verses are devoted to a single warrior, sometimes there comes one praising the whole host collectively, but all are united by the fact that every man named in them fell in the battle of Catraeth.

The poem opens with a fine line which gives the key-note of the whole :—

Greddf gwr : oed gwas
In might a man, in years a youth.

[7] The placing of the definite article before Welsh tribal names is a late custom.

How brave they were ! How young ! These verses are not just songs in praise of soldiers dead in battle, but reveal the deep personal feeling of a man who has lost his friends. The bard was the companion of the warriors in the feast as well as the fray. He recalls their handsome mien, their rich garments and the brightness of their armour, swords and shields. He tells how one fought like a wolf without a weapon in his hand, and how another was so bashful in the court that he became breathless if he had to greet a young maiden, yet on the battle field he mowed down the enemy like reeds. The most beloved of them all was the young Ceredig, quiet and courtly, but experienced in battle. Another was wise in council—and so it goes on, not with commonplace descriptions, but giving the personal attributes of each man.

From hints gathered here and there amongst the verses an outline of the history of the battle can be pieced together. *Mynyddawg Mwynfawr* was lord of *Ysgor Eidin* (Eiddyn), or *Dineidyn* (*Dunedin*, the old name for Edinburgh). He gathered round him a band or host of carefully picked young men from near and far. One or two were from *Gwynedd*, one from beyond *Mynydd Bannawg* in Scotland (? the Grampians), one from *Elfed*. Under him they were to learn the art of warfare as the *Host of Gododdin*. He feasted them for a year and, having drunk his mead, they then had to be faithful to him till death. At the end of the year he sent them forth to attack a place called *Catraeth*. Some of the verses say that 300 set out and only one returned. Others give the number as 365, of whom 4 survived—3 soldiers and the bard himself. The number of the enemy is given as 100,000 and later as 180 against one, or 54,000 !

The enemy were the men of *Deifr* and *Brenneich* (*Berneich*) or Deira and Bernicia, the two tribes which were united to form Northumbria. They are also called *Lloegrwys* and ' chiefs of *Lloegr* '. One verse mentions ships and men from across the sea and another names the Scots and Picts as ' *Gwyddyl a Phryden* '.

Catraeth

There have been numerous attempts to locate the battle of Catraeth, all, however, based on the erroneous supposition that so famous an encounter must be mentioned somewhere in works like the *Annales Cambriae*, or the *Historia Brittonum*, or in the writings of Adamnan or Bede. Scholars believed that the battle must be one of those recorded and that it was only a question of picking the right one ; but the truth

is that there is no known battle whose details answer those of the battle of Catraeth, as given in *The Gododdin.*

The theory of Thomas Stephens that Catraeth was Catterick in Yorkshire must be carefully studied. He opposed the derivation of the word Catraeth from *Cad*, a battle, and *Traeth*, a strand, for he maintained that it was a place-name and so could not mean ' the battle of the strand '. He could not see that it might have such a derivation and yet be a place name (cf. *Cadnant*). In support of Catreath being a proper name Stephens gives two quotations from the Book of Taliesin :

> The men of Catraeth arose with the day, round a lord victorious in battle, a plunderer of cattle.
>
> I saw the Lord of Catraeth beyond the plains.

The name of Urien is connected with both these references to Catraeth. If it be certain that Lord of Catraeth was a title of Urien, it is evident that he must have lost the place before the host of Mynyddog went there, because they fought against Deira and Bernicia and not against their fellow Britons.

Stephens also quotes a fragment of an ancient poem in praise of Cadwallon, the enemy of Edwin in the 7th century who was killed near Hexham in 634 after a victorious year as the conqueror of Northumbria. From it comes the line ' eilywed Gattraeth fawr fygedawc '. The meaning of *eilywed* is ' loss, sadness, mourning ' and Catraeth is plainly a place-name of feminine gender. If this poem is authentic, ' Catraeth, the great and famous ', was remembered in 634 as a place connected with some disaster.

If Catterick is to be accepted as the site of the battle of Catraeth on other than linguistic grounds, some supporting evidence must be produced, and the place must be shown to have been important.

The Roman fort of Cataractonium stood on the road from York to the north where it crossed the river Swale. Some four or five miles after leaving the river the road forked, one branch running to the northwest towards Carlisle and the other continuing directly north to Corstopitum on the Wall, and then on through Bremenium, one of the towns of *Gododdin.* Whoever was in command of Cataractonium could guard the two roads to the north, or the road to the south, according to which side his enemies lay. He could also extend his authority over the open land on each side.*

* See ANTIQUITY, 1939, XIII, 33–4, sketch-map and topographical remarks on the situation of Catterick and its relations to Roman roads and the Scots' Dyke.

When did the Britons lose such an important place ? The many Saxon remains round Driffield and the hills in the east of Yorkshire prove that the Saxons were there from the 5th century, but the British kingdom of Elfed, round Leeds, kept its independence until 616, when it was overcome by Edwin and the men of Deira. York also must have fallen into Edwin's hands, because under his protection Paulinus used it as a base for his mission. Archaeological evidence from Aldborough, Catterick and Darlington suggests that the Saxons moved on from York towards the north along the Roman road and made for the Roman stations in those areas, adapting them to their own uses.[8]

The reference to some disaster at Catraeth in the poem about Cadwallon, and the fact that there is no mention of Edwin in the *Gododdin*, both suggest that the battle of Catraeth must have taken place before 616.

Bede says that Paulinus stayed with Edwin in Deira and baptised in the river Suala. This was the Swale, which flowed past Cataracta. Thus soon after 616 Edwin was in possession of Catterick, which was also within the boundary of Deira.

Nennius says that Urien and his sons fought against the sons of Ida. These battles may be dated to between 560 and 592. The Book of Taliesin calls Urien ' Lord of Catraeth ' and yet there is no mention of Urien or any of his sons in the *Gododdin*. It must be supposed then that Urien's power was at an end by the time of the battle of Catraeth, and that the fight was not to keep the place out of the enemies' hands, but rather to win it back after it had been lost. This is borne out by the deliberate feasting for a year before setting out to the battle. The great purpose which came to the heart of Mynyddawg was that of winning back from the enemy a position of more than ordinary military importance. If it was in the neighbourhood of Catterick, the Court of Urien was not a sandy beach, but it was the key to the lowlands, the key to the road to York. Moreover Catterick is far enough south to be called ' beyond the boundaries of *Gododdin* '. Thus the general weight of evidence seems to be more in favour of Catterick than the banks of the Firth of Forth.

Derivations of Catraeth and Catterick

At first sight it would seem satisfactory to follow Rhys and Loth and derive the name Catraeth from *Cad*, a battle, and *traeth*, a strand,

[8] ' And it is possible that, behind the Gododdin poems attributed to the sixth-century poet Aneirin, with their memories of a British disaster at Catraeth (Catterick), there may survive traditions of this northward advance of the Deirans.' *Roman Britain*, 418–19.

but, although this accounts for the presence of -t- in the middle of the word, it raises a difficulty in connexion with the gender. If the name is derived from these two words, it should have the same gender as the one which determines the meaning, that is to say *Traeth*. This word is masculine, but Catraeth is feminine. There is therefore a grammatical reason for opposing the translation of Catraeth as ' Battle-strand '.

The name of the Roman fort near Catterick is given by Ptolemy as Katouraktonion, or Katourraktonion,[9] (*c.* A.D. 150); and in the Antonine Itinerary as Cataractone (early in the 3rd century); by Bede as Cataracta (*c.* 730), with the ablative Cataractone.

Bede's Cataracta, if it is an ancient form of the name, would give Cadraeth, but the latin word *cataracta* is borrowed from the Greek *katarraktes* and so sometimes occurs as *catarracta*, which would give Catraeth in Welsh. Sir John Morris-Jones recognized this, but he thought that the old form of the name was Caturacto, which later became Cataracto and was confused by the Romans with their *catar(r)acta*. Ekwall also thought that the old form of the word began with *Catu-*, ' battle ' and had no original connexion with a waterfall, but when it is considered that there is a famous waterfall at Richmond, not very far away, these theories lose their weight. There is in fact no need to presuppose a form *Catu-*, for Antonine has *Cata-* in the 3rd century, and the *Katou-* of Ptolemy is most probably a scribal error. It is suggested, then, that the form of the name Cataracton- was derived from the name of the river which flowed from the waterfall at Richmond past the Roman fort. If this was called the ' Cataract River ', Cataractonium would have been a suitable name for the camp. In Welsh the waterfall (Catarracta) would have been called Catraeth, the river flowing from it Afon Catraeth and the fort on the banks of that river Caer Gatraeth (cf. Afon Saint, Caer Saint and Segontium).

To return to the presence of the -t- in Catraeth, there are reasons other than the -rr- in Catar(r)acta which might account for it. Even if the pronunciation had been Cadraeth in the 6th century, it would have been written as Catraeth in the Old Welsh orthography. If the name was lost from the main stream of Welsh, it might have been able to keep the old orthographical form as a local tradition. Again -tr- sometimes occurs in Welsh without any known reason, as in *petruso* and *petryal*, and Catraeth may be a similar exception.

[9] *Monumenta Historica Britannica*, Petrie-Sharp, XIV.

The derivation of Catterick from Catarracta may be unhesitatingly accepted on the evidence of the name of another waterfall in Yorkshire, near Settle, called to this day Catterick Force. (There is also Catterick Moss in Durham). The occurrence more than once of a Catterick in the neighbourhood of a waterfall is conclusive as to its meaning.

Thus, on the evidence given, the neighbourhood of Catterick seems to be the most likely site for the battle of Catraeth.

Eidin, Eiddyn

There are several references in the *Gododdin* to a place called Eidin, or Eidyn, from whence the men who went to Catraeth set out. There is no doubt that the name belongs to a region near Edinburgh, but the correct pronunciation of the name is uncertain.

The *Gododdin* says that the heroes came from *dineidin parth*, and in the Life of St. Monenna there is mention of ' Dunedene que Anglica lingua dicitur Edineburg '. There is no difficulty in accepting Dineidin as Edinburgh. An addition to the ninth chapter of the book of Gildas states that the Britons built a wall across the island from Kair Eden, a very ancient city, about two miles from the monastery of Abercurnig (Abercorn) to Alcluth (Dumbarton). The position of Kair Eden shows that it gave its name to the parish of Carriden on the Forth in Linlithgowshire, and since there are a good twelve miles between Abercorn and Edinburgh, an idea of the size of the district formerly called Eden can be obtained.

Amongst the various references to *eidyn* in the *Gododdin* are Fort of Eiddyn, Hall of Eiddyn, Lord of Eiddyn and perhaps Hill of Eiddyn (*eidin vre*), to which may be compared *minit eidin*, Mountain of Eiddyn, in the Black Book, possibly meaning Castle Rock, Edinburgh, or Arthur's seat.

The modern name of the district round Edinburgh is Lothian, which comes from the personal name *Lleuddun*, in Latin *Leudonus* with the country *Leudonia*. A man bearing this name is described as being ' from the city of Eiddyn in the north '.[10]

If Eiddyn was the pronunciation of the name in the 6th century, it could have had the form Eden in Old Welsh, for *e* in the old orthography can stand for both *ei* and *e* or *y*. The *d* in Edinburgh can be accounted for by supposing that it had not fully turned into *dd* by the time that the Saxons first heard the name, a point which must be discussed again.

[10] Gould and Fisher, *Lives of the British Saints*, IV, 367, 370–1.

Date of the Battle of Catraeth

It has been already argued that the most suitable date for the expedition to Catraeth would be after the death of Urien and his sons, and before the accession of Edwin to the throne in 616. The ' Genealogies ' record that a son of Owain ab Urien, St. Cyndeyrn, died in 603, or 614. Saints lived longer than soldiers, so the death of Owain ab Urien can be put a little before 600. Cyndeyrn's mother was Denw, daughter of Lleuddun Lluyddawg of the city of Eiddyn. Mynyddawg Mwynfawr, whatever his family history, was lord of Eiddyn when he sent his army to Catraeth, which, according to a poem of Taliesin, had once belonged to Urien. Thus the ' Genealogies ' give a certain amount of family reason for the Lord of Eiddyn to concern himself with Catraeth.

One of the oldest Welsh manuscripts, the Black Book of Chirk, records that the Men of the North made an expedition to Gwynedd to revenge Elidir Mwynfawr. Their leaders were Clidno Eydin, Nudd Hael son of Senyllt, Mordaf Hael and Rhydderch Hael. The occurrence of the name Hael three times may seem to cast doubt on the truth of the story, but at least it is witness to an ancient tradition that Clydno Eiddyn was a contemporary of Rhydderch and Nudd ab Senyllt. Rhydderch may be fairly safely dated to the second half of the 6th century, as he was a contemporary of Columba (521–597). Also the Protector, or Avenger, of Gwynedd at the time of this expedition was Rhun son of Maelgwn, which is consistent with a date in the same period, for Maelgwn died in 547 according to the *Annales*. The *Gododdin* mentions with respect a certain Senyllt, who may have been the father of Nudd Hael. It also makes several references to the valour of Cynon and in one verse he is called son of Klytno. It can be confidently asserted that this was Cynon son of Clydno Eiddyn. If Clydno was the contemporary of Rhydderch his son must have flourished about the end of the 6th century and hardly very far into the 7th. He is the only one of the Heroes of the *Gododdin* who can be dated with any confidence by the ' Genealogies '.

A son of Dwywei is mentioned in one verse and the only woman of that name in the pedigrees is the mother of Deinyoel Sant. Her brother was Gwallawg, who fought with Urien against Ida. The *Annales* give 584 as the year in which Deinioel died, so his brother would take his place beside Cynon, but unfortunately the verse in which the name occurs was composed after the death of Aneirin. Similarly, in another verse there is a direct reference to the slaying of

Dyfnwal Frych, or Domnall Brecc—' And crows peck at the head of Dyfnwal Frych '. Dyfnwal Frych was slain in battle in 642 by Ohan, king of the Britons. However, this obvious reference to the battle of 642 does not date the battle of Catraeth. Ohan can hardly be placed in the Host of Mynyddawg, Lord of Eiddyn. What the verse does is to prove that later additions have been incorporated in the *Gododdin*.

The mention of the ' son of Keidyaw ' in the poem may possibly be a guide to the date of the battle. His name is not given in the verse, a fact which suggests that his father was a famous man. Gwenddoleu son of Ceidiaw, a lord of the north, was killed at the battle of Arfderydd (*Bellum armterid*) in 573. It would not be too much to imagine that a brother of his joined the Host of Mynyddawg and died at Catraeth. If Ceidiaw died before Gwenddoleu began to reign, there is no reason why a younger son of his should not be capable of fighting between 580 and 600 ; it could hardly have been later, for this was an army of youths not of old men.

The weight of the evidence which it has been possible to collect is, then, strongly in favour of the last years of the 6th century as the date of the battle of Catraeth.

Mynyddawg's Purpose

The *Gododdin* says that the men were sent to Catraeth on the business of Mynyddawg. What was his idea in sending them ? It was no impulsive whim, because he had taken time to collect them from every side. They were picked men, tried soldiers wearing torques of gold, accustomed to battle. They were youths of breeding, the sons of kings and chieftains. Three hundred noble youths, they came to him from his own land and its borders, and also from Gwynedd, Rhufoniog, Deheubarth, and from beyond the Grampians to the north. After gathering them together, or in order to gather them, he made a feast which lasted for a year. Was he not Mwynfawr or ' exceeding rich '? The bard never tires of recalling this protracted feast—' Famous *Mynyddawg* made a feast of great cost, to buy the land of Catraeth '. Thus he had a definite purpose before him and the feast was not just ostentation, but part of his plan. He wished to attract to himself the best fighters amongst the Britons and the magnificent feast was the bait. He gave them wine from cups of gold, and beer, bragget, and mead without measure from drinking-horns. Then, having won for his host the flower of the knights of the Island, he sent them to Catraeth, to

death, and so lost them. He failed piteously, but what was his object in all this and why did he fail ?

The Lord of Edinburgh always needed a strong host on account of the Picts to the north and, after the arrival of the Irish in Scotland, the need became greater. In fact an Irish king, Aedan, won a battle in Manaw Gododdin in about the year 581, which was probably in the time of Mynyddawg.[11] But there was another danger threatening from the south. Nennius states that Ida was the first king of Bernicia and, according to Bede, he began to reign in 547. Archaeological evidence does not contest this date, and suggests, moreover, that Ida attacked by sea rather than by land. He seems to have had two centres on the coast and to have worked his way northwards step by step. The time came for the Britons in the north to bestir themselves, and Nennius is wholly consistent in his testimony when he states that Urien and his sons fought bravely against Deoric, the son of Ida, and, in the company of three other kings, against Hussa. The four British kings were successful for a time and besieged the enemy for three days in the island of Lindisfarne, but Urien was at length slain through the treachery of Morgant. This was the period of Taliesin and therefore of Aneirin. If Owain, the son of Urien, did survive his father, which is not definitely known, it would probably not have been for long, and the foreigners, who had now been in the land for forty years, were able to strengthen their position and begin to spread out to the west and to the north.

That is what Mynyddawg saw from the top of the rock of Eiddyn and he despaired of success where Urien had failed. A league of kings would not work, nor would Vortigern's Roman plan of hiring barbarians to fight against barbarians. In his perplexity he remembered Arthur. In the *Historia Brittonum* the history of Arthur comes just before the entry about Ida, and Mynyddawg, looking back, would also see Arthur beyond Ida. A century earlier, when the Saxons were winning all the land before them, they had been halted by one man and his host of gallant knights. Collingwood gives a convincingly true picture of the real Arthur. As *Comes Britanniarum*, he made himself leader of the armies of the Britons. He understood that horsemen in heavy armour were the greatest military force of the empire and that a host of knights in armour could scatter the raiders to the winds.[12]

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[11] Tigernach, 581, *Cath Manand*; Rhys, *Celtic Britain*, 155.

[12] *Roman Britain*, 321–4. [A coat of chain mail was found in the Sutton Hoo ship-burial, *c.* 625–30.—O.G.S.C.].

Arthur formed a company of knights on this pattern. He won battle after battle by darting from place to place, as he could with his mounted men, and striking where the need was greatest. Twelve times was he victorious, with Badon Hill as the climax, thereby halting the Saxons and obtaining peace for a generation. Then in 547 came Ida, and the old situation arose again. Would not Arthur's plan work once more ? That, surely, was in Mynyddawg's mind when he began to collect his host, for he formed them as a company of horseman on the pattern of Arthur's knights. There is more mention of horses in the *Gododdin* than in any other piece of Welsh poetry and the men are described as fighting on horseback. Caesar records that the custom of the Britons was to ride to battle and then dismount and fight on foot, but the men who went to Catraeth ' sowed their spears from the saddle, —from the back of a leaping horse '. Their horses were very swift and there is mention of ' a great surge of horsemen '. ' Bloody were the war horses and war trappings at Catraeth '. There is continual reference to their shining armour—' three battle-knights, three mailed hosts '; ' mail-clad men '; ' an armoured spearman '; ' three hundred golden-torqued heroes, and three hundred spirited horses sped with them '; ' the Host of *Gododdin* on horses of the colour of swans '. The description is a consistent one, not of infantry, but of mailed cavalry.

The valour of one of the men is praised, ' though he was not Arthur '. Is not this suggestive ? Arthur was the ideal of each one of the three hundred, though none had his genius, despite their bravery, and least of all their lord, Mynyddawg, for he stayed at home.

Still, his plan was sound enough, and his host wrought a terrible slaughter on the enemy, even allowing for the exaggerations of the bard, but they lost the day. The mistake was not in the method of fighting, nor in the lack of bravery, but in the lack of numbers. The reason for the disaster lay in the sending of a small company of horsemen against too great an army of foot-soldiers. They made terrible havoc in the ranks of the enemy, but in the end they were overwhelmed. The fault was their leader's in asking them to perform deeds beyond their strength. If the verse, which records that the battle lasted for a week, is to be believed, it shows that another mistake was made, that of fighting on after having failed to win by a surprise attack. However good their horsemanship, some were killed each day and they had no reinforcements, whereas the enemy was given time to bring up his forces. In short their leader did not know how to handle cavalry.

On account of the numerous references to the feast of mead before the battle, the previous editors of the *Gododdin* thought that the men who went to Catraeth were drunk on the field of battle and that this caused them to lose the day. Perhaps a year's feasting was not the best preparation for a week's battle, but the bard is not blaming the mead for the defeat. Mead stood formerly for the wage of a soldier; having drunk the mead of his lord he had to pay for it by being faithful to death. 'In the past the Anglo-Saxons, the Britons and the Welsh clearly understood the meaning of *paying for mead*, but Aneirin tends to play rather bitterly on the double meaning of the word *talu*, 'to pay' and 'to merit'. The Host of Mynyddawg merited their mead, but they paid dearly for it. 'They paid with their lives for their feast of mead'.

The condition of the text

If it be accepted that Aneirin, the Bard of the *Gododdin*, was composing about the end of the 6th century and that the battle of Catraeth was fought somewhere between 590 and 600, the question of the purity of the text, preserved in the Book of Aneirin, must now be raised. Is the whole of it the work of Aneirin? Is any of it the work of Aneirin?

The first question can be answered more definitely than the second. The poem as it exists is of composite origin. One verse by a later poet refers to the death of Aneirin; he is in his grave and there is no more composing on the subject of the *Gododdin*. Another verse is about the death of Dyfnwal Frych and is not of the old Aneirin text, nor of his period. One very beautiful verse is an ancient lullaby, the song of a mother to her little son *Dinogad*. This little poem, which is unmatched in Welsh literature, belongs to the Old Welsh period, as its language shows. It must have been written down on some blank page of an early copy of the *Gododdin* and so been incorporated in the poem by a thoughtless copyist, and it has nothing to do with the battle of Catraeth. A like chance has preserved an *Englyn* similar to those found in the Red Book of Hergest which belong to the *Llywarch Hen* Saga. With them it can be dated to about 850.

These four certain examples of additions to the poem show that it is possible that there may be other later odes incorporated in the *Gododdin*. If a lullaby and an *Englyn* were included, it would be much more likely for a verse in praise of a hero to be received into the cycle, especially if it were in the same metre. In many of the verses there is

no mention of place or time, so the original of the *Gododdin* must be looked for in those odes which definitely refer to the battle of Catraeth, or the preparation for it.

Errors in the text can be traced to misreadings of an original copy in Hiberno-Saxon script. Sometimes the metre of a line is broken by a scribe introducing a synonym for one of the words, or even altering a whole line to get rid of an idea which he considered irreligious. A rather barbaric line may be omitted altogether. Glosses also seem to have been incorporated in the text. Thus the text of the *Gododdin*, as preserved in the Book of Aneirin, has suffered from incorrect repetition, unskilful copying, unrelated additions and constant attempts at modernization. This being the case, attention must be turned to the substance of the poem that has been so handed down.

Difficulty of the numbers

There are several references throughout the Book of Aneirin to the actual numbers of the men who went to Catraeth and those that returned, but they do not all agree. One version states that 300 went and only one returned, while a second version puts the number at 363 of which 3 returned, and with them the bard himself. The two accounts cannot both be right, nor is the inconsistency an unimportant matter, for a bard who was an eyewitness of the battle would not be at fault on the question. Which one, therefore, is more likely to be the early and correct account ?

There are nine verses from the *Gododdin* proper to support the 300, but only one on behalf of the other figure and there are grounds for suggesting that this latter verse is not quite above suspicion. The number 363 is also mentioned at the end of the poem called *Gwarchan Cynfelyn*, but here again the lines in which it occurs appear to be a later addition to the poem, and also contain the only word in the *Gododdin* which may have been borrowed from the French. Against this is the fact that two of the verses giving the number 300 are in the B section and come from the older source in the orthography of the 9th century.

There is a final reference to the 363 in the long rubric which proceeds Gwarchan Maeldderw, a poem by Taliesin, but it is clearly no true witness of the number of men who fought at Catraeth, and it can be disregarded as a piece of later glorification of the romantic figure of Taliesin.

Thus it may be seen that the evidence in favour of 300 is far stronger than that in favour of 363, so that the sections in which the latter number occurs cannot any longer be accepted as the ancient poetry of Aneirin. Whoever invented the story of the 363 men and the 3 who escaped was a man who, like others, allowed his love of triads to outweigh his love of truth. If 300 was the number, it follows that only one escaped alive and this was probably *Cynon* son of *Clydno Eiddyn*.

The Gwarchanau

As well as the odes of the *Gododdin* the Book of Aneirin contains four separate poems called in their rubrics *Gwarchan*, or *Gorchan*. This word is the name applied to a particular sort of poem and may be translated ' Counsel ', or ' Doctrine '. The four are in the handwriting of the first scribe, A, and he concluded his manuscript with them.

The first is the *Gwarchan Tudfwlch*, which has the same metre and begins with the same words as an ode of the *Gododdin* on folio 7. It is in praise of Tudfwlch, a hero of the Host of Mynyddawg. It would seem that he came from Eifionydd, in south Caernarvonshire, for there he was mourned. His name also occurs in the *Gododdin*.

The second is the *Gwarchan Adebon*, and it seems to be nothing but a fragment of a long poem of rhyming proverbs. Catraeth is not mentioned in it and it contains no features by which it may be dated, except that the rhyming of proverbs was an ancient tradition.

The third is the *Gwarchan Kynfelyn*, in praise of one Cynfelyn, the enemy of the Angles, a lord of horsemen, whose body became food for crows. He came from Gwynedd. This poem mentions the fort of Eidyn and the horses of Eithinyn.

The fourth is the *Gwarchan Maeldderw*. This is attributed to Taliesin in the long rubric, already mentioned, which precedes it. Like the *Gwarchan Adebon* it is a collection of proverbs. Maeldderw is praised at the end of the poem, and perhaps in the body of the piece, and Esgor Eidin is mentioned, but not the battle of Catraeth. The whole piece is almost impossibly difficult and obscure.

Ornaments, weapons and culture

The chief's court, or palace, where he lived with his retinue, was composed of several buildings and was thus called *Mordai*, or ' Great Houses '. It contained a large hall, where the feasts were held, and a private room for the lord and his lady. Tents were used, probably

in the camp. The most honourable seat for the hero was the top, or end, of the bench (*Lleithig*, an early borrowing from the Latin *lectica*. In a later verse added to the *Gododdin* the word used for bench, *being*, comes from the Saxon). There is no other mention of furniture.

At the feast the soldiers sat round a vessel (*trull*), which held their drink, and drank from a pot (*pann*). This is not a Saxon word, for the Celtic potters in Gaul called one of their pots *panna* in the first century A.D. Wine was drunk from vessels of glass, gold and silver ; and mead, bragget and beer from drinking-horns. There is no mention of food, except that it is said that the enemy in his hut chews a goat's leg ! Yet the *Gododdin* had farms with corn-fields and droves of cattle, and the poem mentions ears of corn, ploughing, fishing and hunting. They also had vegetable gardens and orchards.

The hall was lit with rushlights and pine torches, and had a great fire in it for warmth. On New Year's Day the musicians received a gift ; song was heard in the court and the stories of battles and the mighty deeds of heroes were recounted. Baths were well known, as might be expected amongst the inheritors of Roman culture. The *Gwarchan Maeldderw* mentions trivets or tripods for holding cauldrons.

The clothes mentioned are the mantle (*llen*) and the coat, or tunic (*pais*). Materials were silk, red and purple cloth, and *brithwe*, which was possibly a sort of tartan. Their ornaments were the *cae*, a brooch, or fibula, to clasp their mantles, and *talaith*, a fillet for the hair. They had golden torques round their necks and, perhaps, amber beads.

Before battle the soldiers went to the church, to place gold on the altar and do penance ; there was evidently a priest and a form of Communion. The word God does not occur in the poem at all, but there is reference to ' Trinity in Unity ', baptism, the good of the soul, and the land of Heaven. But for all this fate to them was a stronger force than penance ; his destiny will overtake a man, no matter what he may do. Their motto was ' Pawb pan ry dyngir yt ball ' (everyone dies when Fate so decrees). The astrologer, or wise man who knows men's fate, appears in the poem.

There is a great wealth of military references and terms in these poems. The host attacked at dawn, with the swiftest champions rushing in advance, when the war-cry was raised. The army was subdivided into vanguard, middle, and rearguard. Their protective armour consisted of a broad shield, or a circular one, carried, before the battle, on the hindquarters of the horse, and they wore a coat of leather with shining iron scales stitched on to it. This was called *llurig*, from

the Latin *lorica*, and also *seirch*, Latin *sarcia*, from *sarcio*, to dress or trim (cf. *syrce* in Anglo-Saxon, *sark*, ' a shirt ' in Scotland, and *serkr* in Old Norse). The shields were decorated and strengthened by having nails or rivets driven into them, the heads of which blunted the edge of the enemies' swords. The frame of the shield was of wood, for it splintered in battle, and by beating on it a terrible noise was made to frighten the enemy.

The weapons of attack were the sword, knife, lance and javelin. The sword is described as ' blue ' and so was of iron. The shafts of the spears were usually of ash ; javelins might be of holly. Stag's antlers also provided material for weapons. Clubs were used, but there is no mention of bows and arrows.

It has already been stressed that the heroes of the *Gododdin* were horsemen, and horses are frequently referred to throughout the poem, several different words being used for them and a number of descriptive adjectives.

Kindness, generosity, courtesy and gaiety were the virtues expected of the heroes in the court, but on the field of blood they were bitter, cruel and merciless. Keeping faith was their pride, and fame their desire, while they dreaded shame and disgrace. Their simple belief was that to refuse to retreat in battle earned the reward of Heaven and that man was worth nothing without might and courage. They would go into battle with gay laughter and were more ready to fight than to feast. Such were the men who went to Catreath and however numerous the enemy might be, the faithful warband had to be worthy of its mead.

The poetic form

The style in which the poem is written is characterized by the frequent use of antithesis, or contrast, and also by compactness of statement, which was achieved by the sparing use of words and the omission of the small unimportant ones, especially that of the definite article. The extreme scarcity of the definite article is a marked feature of ancient Welsh poetry, although this is not the case of the early prose, as may be seen in the glosses of the 9th and 10th centuries. The marked absence of the definite article in the *Gododdin* suggests an early period for its composition ; it does not prove it, for the poets of a later period could follow the tradition of their forerunners.

The verses of the *Gododdin* are called odes in the rubric and the majority of them answer to the strict definition of an ode (*awdl*)

that is to say a poem in which one rhyme is maintained throughout. The metres in which the *Gododdin* odes are written cannot be simply classified, as there are so many variations in them and more than one occurs in many of the verses, without mentioning those in the *Gwarchanau*. However it is evident that the early bards composed long lines of 12, 14, 15, 16, 18 (19, 20) syllables and that they built these up in parts, either half lines, thirds or quarters. These subdivisions carried internal rhymes and the whole line ended with the chief rhyme.

There are three different sorts of rhyme in the *Gododdin*. Common rhyme in which the last syllable of two words is identical from the last vowel to the end ; proest, in which there is the same consonant at the end, but the vowel or diphthong before it is different, and Irish rhyme with the vowel or diphthong the same and the last consonant varying according to fixed rules. Rhymes of these types occur both internally and at the end of the lines. The oldest form of rhyme, which occurs in the poems, is that between two words ending in *-ollt* and *-orth*, for, if these are restored to their primitive forms *-olt* and *-ort*, they form a perfect Irish rhyme. This restoration, however, necessitates the belief that the verse was composed at so early a period that *-t* after *-r-* had not yet turned into *-th*.

The lines of the *Gododdin*, as well as being embellished with internal rhymes, are tied by consonance, or alliteration. These were not only used to link up the words of a line, but to weld together parts of long lines, or the subdivisions of those parts. They were also used to join two lines, for the answering sounds can flow on from the end of one line to the beginning of the next.

Date of the poem

'I have tried to treat each section of the Introduction as independently from the rest as I could, lest the common theory should colour the discussion. Looking over the whole now, what is a fair decision on the question of the date of the poem ?

There is no doubt in my mind that Aneirin lived at the end of the 6th century, and that the most suitable date for the battle of Catraeth is a little before or just after 600. The evidence in favour of Aneirin as the author of this poem to the men of Catraeth, or a considerable part of it, is circumstantial, not direct. We have no right to expect anything else in such a matter.

The contents and subject-matter of the poem are in favour of its genuineness. If it is a fraud, I cannot comprehend why it was composed. The majority of the poems attributed to Taliesin are spurious : they are either vaticinations, his name being used to give them the authority of antiquity, or else they are part of a saga, composed at a fairly early period when their language, now so difficult to us, was intelligible to Welsh listeners. But the *Gododdin* is very different. It is not a prophecy, nor is it part of a saga, nor the story of a glorious and romantic victory, but a poem in praise of men who lost the day, lost their lives, lost everything but the renown of fidelity to their lord. Failure was their lot but in spite of that their valiant fight was not forgotten.

Whatever line of research we follow, the *Gododdin* appears to be old, although none gives a definite clue to its exact age. If all be considered in combination the impression of age is strengthened. To the antiquity of the subject-matter must be added the antiquity of the form and of the metre, rhyme and consonance. To the old words must be added the old orthography, remembering always the constant modernization which has occurred throughout the centuries. Let the absence of the definite article be remembered. Let it be recalled that no one has yet proved that so much as one word in the *Gododdin* has been borrowed from the Saxon. I believe that we can at length, and with some confidence accept the body of the poem as the authentic work of Aneirin of the Flowing Muse, the Prince of Bards'.

The Antiquity and Function of Antler Axes and Adzes

by V. Gordon Childe

THE inhabitants of the wooded plain of northern Europe that in early post-glacial times extended almost uninterrupted from the Pennines to the Urals were distinguished from their mesolithic contemporaries, the Azilians and Tardenoisians, as well as from their best-known palaeolithic precursors, by the possession of a kit of heavy tools suitable for wood-working. This distinctive equipment was an adaptation and response to the dominant feature of the northern environment of those days—the great Boreal forest. So I have termed the cultures characterized thereby (Duvensee, Maglemose, Kunda, Broxbourne, etc.) the Forest Cultures. From this point of view the most significant diagnostic traits in all of them are not their fishing and hunting tackle that form the most spectacular among their relics, but their heavy tools of bone, antler and stone. In 1931[1] I discussed the development of this heavy industry in the central area round the Baltic as an adaptation to the forest environment, a manifestation of a distinctively woodland culture-pattern, to use an American expression. In 1937, thanks to fresh discoveries in England, Esthonia and the U.S.S.R. I was able to trace the same wood-working equipment throughout the whole woodland-zone from Russia to England.[2] But all these studies of adaptation were in fact inspired by a hint from Dr Schwantes (then of Hamburg); for to him belongs the credit of first recognizing the antler objects I discussed as wood-worker's implements.

In an article entitled ' The Celt as the dividing-line between the Old Stone Age and the New '[3] Schwantes drew attention to the so-called ' Lyngby axes ' of reindeer antler as the oldest known celts. He

[1] ' The Forest Cultures of Northern Europe : a Study in Adaptation and Diffusion ', *J.R.A.I.* (1931) LXI, 325–48.

[2] ' Adaptation to the Post-glacial Forest ', *Early Man* (Philadelphia, 1937), 233–42.

[3] ' Das Beil als Scheide zwischen Paläolithikum und Neolithikum ', *Archiv. für Anthropologie*, XX, 13 ff. The German term ' Beil ' can be used of either an axe or an adze-head, an advantage possessed by the somewhat discredited English term ' celt ', which is accordingly here used in this general sense.

not only stressed the new tool's significance as an addition to man's equipment for controlling nature, but also suggested that its appearance would be a good typological criterion for distinguishing the New Stone Age from the Old; for he insisted both on the absence of wood-chopping tools from the Upper Palaeolithic (as then known principally in France) and also on the genetic connexion between the 'Lyngby axes' and the 'antler axes' of the Maglemosean and their later descendants. Subsequent discoveries—notably the excavations at Stellmoor near Ahrensburg by his pupil, Rust[4]—have justified Schwantes' estimate of the antiquity of the Lyngby culture while the role of its distinctive implements in the genesis of the later celts has been generally accepted.[5] But Schwantes' idea of using these implements as a criterion for 'neolithic' status has not won universal approval. In human history the invention of a chopping tool is a much less significant event than the beginning of agriculture and stockbreeding. At the same time his criterion would seem to have the effect of making 'neolithic' in Germany and Denmark older than anywhere else in the world. In any case it proves to be subject to two fatal defects. Firstly 'celts' can be traced in east and central Europe well back into the pleistocene, indeed at least to the Solutrean phase of culture that no one wants to call neolithic. And secondly the 'Lyngby axes' can hardly really have been used for *chopping* wood.

Implements of reindeer antler with the brow tine cut off obliquely and ground to an edge, precisely as in the classical Lyngby axes (PLATE I, 1–3), have been found by Morosan in layer V at Stânca Ripiceni on the Pruth in Moldavia.[6] This layer contains also flint points, pressure-flaked on both faces like those of the Solutrean of Poland together with remains of horse and bison. In the Hungarian National Museum at Buda-Pest I saw what seems to be another 'Lyngby axe' from the löss-Magdalenian of Sagvar (near L. Balaton). Finally at Brno Dr Absalon showed me several implements of the same sort from the typical Magdalenian deposit in the cave of Pekarna. In other words the 'Lyngby axe' was not created in north Germany in pre-Boreal times, but was brought thither from the southeast where it had been in use during the upper pleistocene. And of course there had been woodlands in southeastern Europe when north Germany was still covered by the last glaciers.

[4] Clark, ANTIQUITY (1938), XII, 154–71.

[5] Clark, *The Mesolithic Settlement of Northern Europe*, 84.

[6] *Dacia*, V–VI, 17.

Moreover truly palaeolithic sites in western, central and eastern Europe have yielded implements of antler or mammoth ivory with polished bevelled edges that agree with those of the ' Lyngby axes ', and of the undoubted antler chisels of Maglemose and Kunda. In western Europe[7] such, if noticed at all, have generally been described as *lissoirs* (? for leather dressing) or as fabricators (for flaking flint). But in Russia Efimenko[8] frankly describes similar objects, of mammoth ivory, from Kostienki I as wood-working tools (PLATE II, 1). In the later station of Kostienki IV (where mammoth was still hunted)[9] there has recently been unearthed a wedge or chisel of ground stone that looks like a translation of the ivory implements and confirms Efimenko's view (FIG. 1). I would equally be inclined to regard some of the *lissoirs* of reindeer antler from central Europe too as carpenter's tools. In the Magdalenian of Petersfels (PLATE II, 2), Peters[10] mentions that the chisel-like tools of reindeer antler have been battered both on the butt and on the blade; the bones of red and roe deer and boar, though rare, prove that there was some forest not too far away.

So in east and central Europe in palaeolithic times there are indications of the existence of wood-working tools, quite independent of the ' Lyngby axes ' and as plausible as these. Indeed judging by Kostienki IV the appropriate method of sharpening these tools of ivory and antler grinding, had been already applied to stone, and the ' neolithic polished celt ' created before the mammoth was extinct in south Russia.

Now the use of antler and bone for wood-working tools is adequately attested by ethnography. The Red Indian tribes of the northwest Pacific coast, celebrated for their skill in wood-carving and inhabiting an environment not unlike the forest zone of Northern Europe in Boreal times, provide good examples. The Sheeswap, for example, used chisels of elk and buck antlers, and even adzes of antler and bone[11] that are quite like the palaeolithic implements just described, and the more familiar tools from Maglemose and Kunda (cf. FIG. 2).

But I can find no ethnographic evidence for the use of such materials as the blades of genuine chopping implements. The best modern analogy to the Lyngby axe that Clark [12] can adduce are reindeer

[7] e.g. from Gourdon, Combe Capelle and Mas d'Azil.

[8] *Pervobytnoe Obshchestvo* (1940), 401.

[9] *Kratkie Soobshcheniya* (Inst. Istor. Mat. Kultury, Akad. Nauk), 1940, IV, 38.

[10] *Die altsteinzeitliche Kulturstätte von Petersfels*, 43, pl. XII, 1.

[11] American Mus. Nat. Hist., *Anthropology Memoirs*, II, 474.

[12] *Mesolithic Settlement*, loc. cit.

FIG. 1. CHISEL OF SOFT STONE, KOSTIENKI IV

FIG. 3. WAR CLUB OF ANTLER, BRITISH COLUMBIA ($\frac{2}{3}$)

FIG. 2. WEDGE OF ANTLER USED BY THOMPSON INDIANS ($\frac{1}{3}$)

antlers, shaped like the Lyngby axes, but used by Cree ' to dispatch enemies in battle and such animals as they caught in snares ' (FIG. 3). If swung by the antler body, I doubt if the tine ' blade ' of the Lyngby axe would make much impression on wood before the edge was splintered and the antler handle itself shattered by the concussion. The same remarks apply to the perforated antler adzes of the Boreal phase and the later antler axes. These are doubtless developments of the Lyngby type in which a wooden handle inserted in the perforation of the deer horn head replaces the earlier shaft of reindeer antler that was consubstantial with the tine blade. While I have previously accepted these blades of red-deer antler as chopping tools, I now fear that the blades thus used would be no more effective than those of reindeer antler.[13] But I still believe that they and their pre-Boreal prototypes were used in wood-working.

Now the Thompson Indians of the northwest Pacific Coast used to make of elk antler implements very like our red-deer antler tools, but used them as wedges ;[14] they were, that is to say, driven into the wood to be split by hand hammers. I suggest therefore that the ' Lyngby axes ' were really handled wedges employed like the so-called deer horn picks of England and western Europe. In mining and ditch-digging on the chalk, it will be remembered, the antler ' pick ' was not swung as a pick-axe is. The brow tine that forms the point of the pick was driven into the chalk by blows on the back of the antler behind the tine[15]. Only when the prong had been hammered in as a wedge was the body of the antler gripped and used as a *lever* to split off the piece of chalk loosened by the tine. Plainly the reindeer antler ' axe ' or ' adze ' could be used in precisely the same way on wood. In fact in describing his twenty-five specimens from Stellmoor, Rust[16] expressly mentions that most show traces of battering on the antler shaft immediately behind the tine-blade just as the English deer horn picks do ; it is well shown in Clark's plate IV, 4b (ANTIQUITY, XV, facing p. 469).

We may then accept the ' Lyngby axe ' with its Solutrean and Magdalenian precursors as a handled wedge and therefore as an adjustment to a forest environment. The perforated stag horn adzes and axes of later periods, if derived as suggested from the Lyngby type,

[13] It was Sir Lindsay Scott who first pointed out to me my academic mistake.

[14] American Museum Nat. Hist., *Anthrop. Memoirs*, I, 183. (See fig. 2, p. 261).

[15] Curwen, *Archaeology of Sussex*, 113.

[16] *Offa*, 1936, I, 11.

would then be perforated wedges, the wooden shaft now taking the function of lever.

But when a stone blade—a flint tranchet-axe as at Maglemose or a ground-stone celt as at Kunda—was inserted into the hollowed end of the antler to replace the horn blade, the implement could be used as an adze, or even as an axe, for chopping. This development is perhaps forshadowed in pre-Boreal times; for on some of Rust's reindeer antlers from Stellmoor the tine has not been cut off obliquely to form an edge, but hollowed out to form a socket. No blade has been found in place in these sockets, but they might have held axe-heads and so converted the antlers into genuine axes or adzes. But even if this had been done, it would presuppose the celt as a distinct invention. There is no reason for referring that to north Germany. We have already cited the ground-stone celt from the Upper Palaeolithic of south Russia, and in the Solutrean of Fourneau du Diable (Dordogne)[17] we see a section of reindeer antler hollowed out at one end to receive some sort of blade.

On the other hand 'Lyngby axes' could be used also as weapons like the reindeer antler clubs of the Cree Indians. So our perforated antler wedge too could be used as a weapon, as a club-head with an edge. Now I have previously pointed out that the stone battle-axes of Eurasia must be derived, directly or through copper translations, from the antler axe to which they would owe their rounded body and the nobbed butt (derived from the antler's burr).[18] This suggestion has received confirmation from recent discoveries. A typical antler axe accompanied every male interment in the cemetery of Brześć Kujawski on the middle Vistula.[19] And this cemetery with its clear Danubian II survivals is rather older than the majority of the stone battle-axes from east and central Europe. The central grave under a large barrow of the Ukrainian battle-axe culture at Usatova near Odessa[20] was furnished with an antler battle-axe, particularly reminiscent of the stone weapons. The butt end of a similar antler weapon comes from an early Caucasian 'dolmen' near Novorossisk.[21]

But in the light of the facts adduced above the derivation of the stone battle-axe from the antler axe means less than ever a derivation

[17] *Archives de l'Institut de Paléontologie humaine*, X.

[18] *E.S.A.*, IX, 158–62.

[19] *Wiadomosci Archeologiczne*, 1938, XV, 1–105.

[20] *Sovietskaya Arkheologiya*, 1940, V, 242.

[21] *E.S.A.*, IX, 17.

of the former from the Baltic region. On the contrary we have now seen that its antecedents existed as far southeast as Roumania even in pleistocene times. Wherever the post-glacial forests sheltered red deer, the handled wedge of reindeer antler could be transformed into the perforated wedge of stag antler, i.e. the ' antler axe '. It may be just an accident that we can follow the transformation so early and so closely in the North. There the peaty meres and sluggish streams frequented by the Forest-folk in Boreal times have preserved bone-work and horn-work exceptionally well. Under other conditions such has disappeared even though it once existed. That is almost certainly the case in England ; it may well have happened also in Moldavia, the Ukraine and central Russia. There a hiatus still yawns between the Old Stone Age and the New, very imperfectly bridged by dune finds of Swiderian and Tardenoisian flints. But as soon as the New Stone Age has dawned, we are confronted with an abundance of perforated antler axes in the Cucuteni and Tripolye cultures of Roumania and the Ukraine—and, though less often preserved, in the Dwelling Places of the Russian forest-zone.[22] It would be premature to assert that all these antler tools or weapons must be derived from Kunda or Maglemose. An autochthonous descent through the—unknown—mesolithic adaptation to the local forest is a possibility. If that be admitted, it would be equally unwarranted to derive copper battle-axes on the Kuban or in Hungary, that are translations of antler axes, from Jutland or Thuringia.

[22] Finds enumerated and mapped in my article in *Early Man*, cited in note 2.

PLATE I

'AXE' AND 'ADZE' OF REINDEER ANTLER
FROM THE SOLUTREAN OF STÂNCE
RIPICENI, MOLDAVIA ($\frac{1}{4}$)
('BLADES' $\frac{1}{2}$)

facing p. 264

PLATE II

1. CHISEL OF MAMMOTH IVORY, KOSTIENKI I $(\frac{1}{3})$

2. CHISEL OF REINDEER ANTLER, PETERSFETS $(\frac{1}{2})$

ANTLER AND BONE CHISEL, MAGLEMOSE $(\frac{2}{5})$

Homer and the Odyssey

Another Point of View

by Colin Hardie

BRITISH scholars have tended to believe in a single author of the *Iliad* and *Odyssey* more perhaps from right feeling than on a sound basis of argument. In his article[1] Mr Casson frankly begins by 'begging two separate questions'—that Homer *wrote* the *Odyssey* and that he was a single poet. The first is not so welcome an answer as the second. Mr Casson is not of course concerned to argue about either and only mentions in passing one argument—the oblique method of description in 'both' the *Iliad* and the *Odyssey*. Examples of it he calls 'hints' that make it easy for him to disregard half the controversy about Homer. The purpose of his article is, however, different, to show that Homer visited Ithaka. The aim of the present one is not primarily to reply to his main thesis except by the way, but rather to supplement it and suggest in outline another point of view than that implied by him.

In the *Poetics* Aristotle expressly praises the oblique or dramatic method of characterization as exemplified in the *Iliad* and *Odyssey*, and in no other epic poems. Aristotle, like Mr Casson, assumes that Homer *wrote*, but the oblique method can neither prove nor disprove that point.

On p. 78 Mr Casson speaks of Homer having sung his Iliad, and on p. 75 of the difference of ancient from modern poets, who collect their material from reading as well as from travel. But if Homer wrote, why should he not also have read? Mr Casson's distinction between ancient and modern poets may or may not be true in general, but it passes over the question which has occupied scholars since the time of Wolf, whether Homer composed pen in hand, roughing out his lines and then polishing them, and elaborating an individual style and phrase of his own. This question has a bearing on the other question, whether one man composed the whole *Iliad* and *Odyssey*, and cannot be separated from it, except by begging a third question.

[1] Antiquity, March 1942.

In recent years much work has been done on traditional and oral poetry, notably by Professor and Mrs Chadwick in their *Growth of Literature*,[2] and, in the opinion of the writer, the work of the late Milman Parry, a young American scholar, has conclusively proved that Homer composed by oral extemporization in a traditional poetic language of great antiquity.[3] Such composition is possible only after a long professional training in the traditional language and the traditional themes. The difference between ancient and modern writers is trivial compared to this contrast of oral composition and writing. The oral poet does not strive for an original and personal style, nor for avoidance of repetitions or of stock epithets in incongruous contexts. His originality shows itself in the use of the traditional themes and language to achieve unity of plot and dramatic characterization. Parry's proof consists in explaining as an inevitable result of oral composition all the anomalies of Homeric language and metre, which have driven scholars to theories of multiple authorship, of slow accretion over centuries round an original kernel and the like, of which Mr Casson makes fun, rightly enough, but without giving his reasons.

It is not enough, as Aristotle said, to be right, but one should explain the cause of error. The conclusions of the academic pedants may be wrong, but their observation of contradictions, repetitions, apparent incongruities, of linguistic, stylistic and metrical peculiarities must be taken into account. These peculiarities are now familiar enough; the mixture of dialects, Arcado-Cypriot, Aeolic and Ionic (not to mention non-Greek) in such a way as can never have been spoken anywhere even as a *lingua franca*; the absence of wilful archaism and yet also of mechanical alteration of a written text by a scribe intent to make it as Ionic as possible; the mixture of forms of very different ages, notably the observation and neglect of the digamma; the frequent admission of hiatus. Only by proving Homer to be an oral poet can one disprove the separatists' arguments on their own ground.

Homeric scholars, assuming that Homer wrote, like all other Greek poets (except perhaps Hesiod), and like all English poets (unless perhaps the author of Beowulf is English), in a personal style, have been

[2] C.U.P. 1932.

[3] Milman Parry, 'L'épithète traditionelle dans Homère, Les Formules et la métrique d'Homère' (Les Belles Lettres, Paris). 'Studies in the epic technique of oral verse-making', Harvard Studies in Classical Philology XLI, 1930, XLIII, 1932. 'The Homeric Gloss', Transactions of the American Philological Association LIX, 1928. 'Enjambement in Homeric Verse', ibid, LX, 1929.

forced by this assumption to absurdities. The theories of multiple authorship and slow accretion are all true enough of the epic style and technique, but are quite untrue of any poem in that style, although the *Works and Days* shows signs of accretion and is liable to it owing to the absence of a ' single action ' as its plot. Greek mythology likewise may be the product of centuries of conflation and accretion, but, if so, the process seems to have stopped on the Dorian invasion. The idea of Homer as an oral poet has been discussed since 1769 when Robert Wood proposed it, but the implications of it have not been rigorously deduced and the length of the *Iliad* and *Odyssey*, 15,000 and 12,000 lines, has seemed to preclude it. It is difficult to imagine for what occasion the *Iliad* or *Odyssey* was designed.

But to say that Homer was an oral poet is not to say that he could not read nor write. The *Iliad* and *Odyssey* must have been written down immediately after their composition and recitation, since the text preserves all the minute marks of a brief period in the development of a traditional oral formulaic style of extemporizing. The variations in the text of Homer are small and almost confined to the inclusion or exclusion of whole lines or sets of lines of a completely formulaic character. The poet may have written down the original text himself or had a disciple record it from his performance. But he never blotted a line, unless the Shield of Achilles shows signs of balanced and revised composition.

In rejecting the absurdities which have so long afflicted the study of Homer and in returning to the unanimous tradition of antiquity, we need not confine ourselves to a few ' hints '. Milman Parry shows that both the *Iliad* and the *Odyssey* exhibit the same delicate balance between alternative formulas which must have tipped in favour of one or the other after a brief period. Aristotle in the *Poetics* has adduced powerful arguments. He collected all the epic literature that survived in his day in Greece and found that the *Iliad* and *Odyssey* were alike in having a totally different and superior kind of plot as well as of characterization from all the others, the poems of the Epic Cycle, the *Theseids*, *Heracleids* and *Thebaids*, including Antimachus, so much admired by Plato. The *Iliad* and the *Odyssey* are not exactly, as Mr Casson says on page 81, ' a great synthesis of tales ', but, as Aristotle observed (c. 17 and 23), they cover a brief period in the whole Siege of Troy or Life of Odysseus. This part of the story the poet selected and stretched out into an enormous canvas, giving room for characters in ' episodes ' casually

related to each other and leading to the conclusion of the 'single action'. How he did this has been admirably shown by Mr T. W. Allen.[4]

Instead of a string of unrelated events, whose order is indifferent, and whose contribution to the catastrophe or to the illustration of character is casual, such as we find in the prose chronicle of Dictys or its versified counterpart, the Epic Cycle, or in Apollonius' *Argonautica*, we meet a single action of many parts, forming a causal unity which is the work of consistent characters. There is nothing of a poem 'generated by purely chance memories' (p. 80). There are, of course, differences between the *Iliad* and the *Odyssey*, but they are minor ones and the author of the Περὶ ὕψους (c. 9) has well described and accounted for them. Plot, according to Aristotle, is the most important element in a poem, and the *Iliad* and *Odyssey* are like each other only in the excellence, originality and scope of their plots. But characterisation is second, and in this too, as Mr Casson has said, the *Iliad* and the *Odyssey* stand out together far above the rest. The method is the same in both, dramatic speeches in the first person by which the character reveals himself and his purposes. 'The poet should say as little as possible in his own person. . . . After a brief preface Homer at once (c. 24), introduces his characters'.

Vergil alone of the ancients understood what Aristotle had pointed to as the real reasons for Homer's excellence, and dared to imitate him in essentials and not in superficialities. The *Aeneid* deals with a brief period of Aeneas' life and yet in a sense is a 'synthesis' as it looks backward in dramatic narrative and forward in prophecies, visions and descriptions. It takes for granted in its hearers a knowledge of the whole story. Such knowledge of the whole is presupposed in even greater completeness and detail by the *Iliad* and the *Odyssey*. Professor George Calhoun[5] has shown what a wealth of themes Homer alludes to, in passing, as familiar to his audience. In Book II of the *Iliad* some fourteen myths are referred to, and in Book III six. Mr Casson's idea that Homer wandered round and picked up material in inns and on quays does not account for the traditional character of the epic themes as of the epic language. The *Odyssey* is not, if a later poem, 'newer material' than the *Iliad* (p. 68), and Herodotus shows the demand for the *Iliad* steadily increasing and spreading over all the Greek world.

[4] *Homer: the Origins and the Transmission*, c. VIII, 177–201, 'The Scheme of the *Iliad* and the *Odyssey*'. O.U.P. 1924.

[5] G. M. Calhoun, 'Myth and Märchen in Homer'. American Journal of Philology, LX, 1939, pp. 1–28.

Homer may have been a practical man (p. 75) and a searcher for facts, but for his themes he looked to myths, not facts, to tradition and 'the Muses, who know it all'. The archaeological evidence which Mr Casson adduces, proves some kind of continuity (p. 77) of life on Ithaca: it does not prove that myths are memories of historical events. The division of myths into historical sagas, ritual myths proper and folk-tales is still widely accepted; but the whole basis of it has been undermined by Professor Hooke and his collaborators.[6] Lord Raglan[7] has continued the method and spirit of A. M. Hocart's brilliant, revolutionary and neglected *Kingship*, and made a lively and convincing attack on the traditional view. Myth may be detached from ritual, and treated independently as a story and attached to a historical character and a definite place. But its pattern remains the same and is not historical. The religious origin and continuing religious associations of Greek mythology cannot be ignored. Professor J. A. K. Thomson[8] has investigated the cults of Odysseus, and the religious connexions of the other heroes have been traced with almost an excess of enthusiasm by M. Charles Autran,[9] on lines parallel to those of M. Joseph Bédier.[10] Many recent articles on particular myths could also be quoted. Mrs Chadwick in her recent *Poetry and Prophecy*[11] has illustrated from an immense range of knowledge the religious origin of the themes, technique and personality of the poet-prophet and frequently quotes Homer in this connexion. The heroic hexameter is a metre of hieratic and probably pre-Greek origin, which the Greeks located in 'Pelasgian' Dodona or 'Carian' Delos.

Mr Casson speaks of Homer as a professional (p. 77) belonging to a still itinerant profession. His profession certainly forced travel on him (p. 83). But Homer has, when not composing poetry, to eat and drink and to earn a living (p. 73). He is on Ithaca for poetry, not for gain (p. 79). He is 'like all Greeks' an ordinary traveller (p. 73), a tourist (p. 74), a practical man (p. 75), a lover of facts and of the wild and strange tales of sailors (p. 84). But of professional training and

[6] *Myth and Ritual*, ed. S. H. Hooke. O.U.P. 1933.

[7] *The Hero*, Methuen, 1936.

[8] *Studies in the Odyssey*, O.U.P. 1914.

[9] *Homère et les origines sacerdotales de l'épopée grecque*, editions Denoel, Paris, 1938. 3 vols.

[10] *Les légendes épiques: recherches sur la formation des chansons de geste*. Edouard Champion. 3rd ed. 1926. 4 vols.

[11] C.U.P. 1942.

status Mr Casson says nothing. The Greek critics knew little enough of the oral style (though there are hints about extemporization)[12] and were puzzled by its features, especially the incongruous uses of fixed epithets, but they had some idea of the semi-priestly status and guilds or schools of bards. A bard was not a luxury, as Mr Casson says (p. 77), unless all priests and all religion are sheer luxuries. Homer makes Phemius and Demodocus honoured and permanent officials of a royal Court. The mythical *Lives of Homer* speak, like Mr Casson (p. 78), of Homer's precarious and poverty-stricken life and of his travels. If this picture is true, the profession has gone down in the world with its patrons, the kings. (Homer travelled to Chalcis for a festival, the funeral of its king, Amphidamas, with a contest of rival bards). Perhaps later with the organization of festivals, the profession, even if repetitive and no longer creative in the mouths of ' rhapsodes ', improved again and flowered in the grandiose Ion. But there is no need to suppose Homer poor and itinerant. Even when kings were no more, the hereditary guild of Homeridae seems to have been settled on Chios, like the Hesiodic School on Helicon. The themes and the technique can have been learnt only by years of study.

But the relation of the bards to the Mycenaean age, of which Mr Casson says (p. 71) we know a good deal more than the mere historical outlines, may not have been as he conceives it. The doctor is given a place at some prince's court (p. 77, does he mean tyrant's ?), when the bard is inevitably still itinerant ' before society is perfectly organised and solidly established on a sound economic basis '. ' Now at last (in the 8th century) cities are springing up and colonies settled ; buildings and city walls and all the mechanism of fixed urban life is beginning ' (p. 78). It is a curious idea that Greek society in the eighth century was, or indeed that any society should be, perfectly organized. Colonization is usually a sign of disturbance, and city walls are more like evidence of civil war in Greece than of perfect organization. But anyhow the Mycenaean, and even more the Minoan, age has as good, if not a better, claim to be established and civilized. The walls of Mycenae and Gla, the drainage and absence of walls of Cnossos are evidence of it. The palace of Cnossos implies some mechanism of a fixed urban life, and there were Mycenaean colonies in South Italy. It was to the Mycenaean age that Homer and Hesiod looked back with regret, οἷοι νῦν βροτοί εἰσιν. The archaeological discoveries of the last 50 years have shown how much

[12] cf. Josephus, *Apionem* 1, 12 ; Homeric *Hymn to Hermes*, 54–7; *Vita Hesiodi*, in Homer, vol. v, ed. by T. W. Allen, p. 222.

can be said for their view. In his *Heroic Age*[13] Professor H. M. Chadwick came to a similar conclusion on other evidence. A heroic age is one in which barbarian military leaders prowl on the fringe of rich and more highly civilized urban communities, looking with envy on their seemingly inexhaustible wealth, and with contempt on their luxurious and peaceful habits. They learn, perhaps as mercenaries, the higher technique and organization and also the weaknesses of the 'haves' and exploit them to install themselves on the thrones of the legitimate kings with the help of their gangs of adventurers. In a civilized world they would be in prison, as Professor Chadwick remarks. The destructive militarism of the 'heroes' and their contempt for the sources of the wealth that they covet, shatter the economic basis and confidence of the peoples whom they overrun and plunder, and who consequently decline into a 'dark age'. The Teutonic tribes hungrily roaming round and seizing the rich provinces of the Roman Empire exemplify the same social (or anti-social) habits as the Greek invaders of the Minoan world. This situation recurs today and has been put in a wider, and more speculative, historical context by W. J. Perry.[14] The Mycenaean age is one of transition, in which the culture is predominantly Minoan, but most of the kings are Greeks. They exhausted themselves, according to Hesiod, in wars round Thebes and Troy (and we might add Egypt) and later fell victims to their own *Machtpolitik* as practised by the more barbarous Dorians. But continuity of tradition was preserved, not only in the out of the way Ionian islands, but in Ionia, wherever Arcado-Cypriot, Aeolic and Ionic were spoken, in many cult-places even in the Dorian domains among the subjected populations, and especially at the great religious centres. In Ithaca the palace and the royal line perished (p. 76), but there is continuity of cult in the cave of the Nymphs (p. 82). It is cult and not inns that kept Odysseus' memory alive. Cult is evidence of some surplus of wealth, however modest, and with it goes priestly tradition and learning. It is not poverty (p. 77) nor the encouragement of glorious deeds in a depressed generation that preserves myths. But it is unlikely that so humble a cult preserved the whole great interwoven body of Greek mythology, the knowledge of Mycenaean customs and the epic technique, on which Homer drew. Delos for instance is a more likely centre.

[13] C.U.P. 1912.

[14] *The Growth of Civilisation*, 1st ed. 1924, Pelican books, 1937.

In the Mycenaean age Greece was a religious, cultural and political unity. In the dark age it broke up into isolated pieces. A sign of recovery and of the reopening of communications is the attempt to reintegrate Greek unity by re-establishing the Pan-hellenic festivals. The origin of these, according to the Greeks,[15] was in the Mycenaean or even Minoan age. Troy too had been the site of a Pan-hellenic festival, but it was lost to the Greek world beyond revival, except in the tradition of the other centres. The Mycenaean age was the heyday of military kingship, and the half-divine kings, or heroes, adapted to the purposes of their own personal glorification the institutions of the pacific divine kingship, such as that of Minos. One of them was the profession of minstrel, an adaptation of the old priestly and prophetic poet, the leader of the sacred chorus and director of the ritual drama, the ' Spielman '.[16]

Nilsson[17] has shown how Greek mythology reflects the Mycenaean age. With the Dorian invasion it peters out in the few surviving lines of kings. The unity of culture, which archaeology has revealed, is reflected in the political predominance, however precarious, of Agamemnon, and it in its turn has its religious expression in the unity of Olympus under Zeus. It might be thought an argument against Nilsson that Mycenaean art, unlike Greek, does not represent scenes from mythology, but of cult.[18] But this is not so, if the ritual origin of myths is accepted, and the myths were then alive as rituals of kingship. In the dark age kingship declined and became a half-understood survival, and mythology, while its religious origin was clear, was given a sort of independence and misinterpreted as historical. This in a sense it was, as it reflected the customs of a real culture and contained the names of some real kings and many places. But the pattern of the actions ascribed to these kings comes from ritual dramas, however, reinterpreted and rationalized they may be by poets who treated them as historical. Odysseus may be the name of a real man, but it was as a king and not as a man of great character (p. 76) that he got his place in mythology. His character was given him by Homer, working perhaps on hints from his predecessors. For Homer and the bards the canon of Greek mythology seems to have been fixed ; poems did not grow from purely chance memories (p. 80), and new material (p. 78) was not

[15] Aristotle, fragments. Ed. Rose. Teubner. No. 637.

[16] Lord Raglan, *The Hero*, p. 277 et sq., Homer, Od. 8, 261.

[17] M. P. Nilsson, *The Mycenaean Origin of Greek Mythology*. C.U.P. 1932.

[18] Sir Arthur Evans, *Mycenaean Tree and Pillar Cult*. Macmillan, 1901.

desired by the epic poets, nor yet, as a rule, by the lyric, tragic and even comic poets.

How full and tenacious the bardic tradition about the Mycenaean age was, can be shown from one example. Mr Casson assures us that Homer was a poet and not a cartographer. It is not clear why a poet should not be a cartographer, and what does Mr Casson make of the Catalogue ? He cannot fall into the academic pedantry of supposing it a late insertion. Mr T. W. Allen [19] seems to the writer to have shown conclusively that the Catalogue can only be what it professes to be, a gazetteer of the Mycenaean kingdoms. It is intelligible only if it describes a state of affairs before the Dorian invasion. No one could have invented it afterwards. Even if Homer had been Thucydides and Pausanias in one, he could scarcely have reconstructed Diomedes' kingdom even by visiting every village in the Peloponnese. There is no need to suppose that Homer ever left Chios or Smyrna or wherever it was. How are we to suppose that Homer was able to describe the shield which went out of use by the 13th century B.C. or the Mycenaean palace (which however survived in Cyprus) ? It seems unlikely that Homer had never seen tripods on wheels before he visited Ithaca (p. 81). He describes few things not either familiar or hallowed by tradition. What evidence is there that Troy in early Greek times was probably as popular a battlefield for the curious tourist as the field of Waterloo today ? One such tourist is known, Alexander the Great, but he thought of himself as a second Achilles.

We need not, then, suppose that Homer visited Ithaca, without denying that it is a physical possibility. Mr Casson advances a theory (p. 82) that Ithacan sunsets are unlike those elsewhere in Greece and peculiarly gloomy and so aptly described as ὑπὸ ζοφὸν ἠερόεντα. But the phrase is a formula. Homer makes the mistake of saying that Ithaca is ' farthest out towards the west '. He ' just got a bit muddled ', says Mr Casson. But more probably Homer knew of Ithaca as he did of Agamemnon's cities in Pylos,[20] from the tradition. This will explain why the Greeks also localized Scylla and Charybdis, the Laestrygones, Polyphemus and Circe. These, according to Mr Casson (p. 74) are fairy tales and do not convince us of actual geography. But they convinced the Greeks, as much as Ithaca did. But if Homer did not invent out of pure imagination (p. 75) and had nothing of the Celtic twilight about him (though he liked the wild and strange tales of sailors

[19] T. W. Allen, *The Homeric Catalogue*, O.U.P. 192.

[20] Homer, *Iliad*, IX, 149–53.

(p. 84)), where did he find these localizable fairy tales? There is no need to have recourse to M. Bérard's Phoenician log-book. The Mycenaeans voyaged in these seas. By Homer's time the west had faded into the semi-fabulous and perhaps been conflated with those spirit journeys of the rapt prophetic Shamans whom Mrs Chadwick has discussed and of whom Aristeas[21] is a Greek example. The epic of Gilgamesh is the earliest form of the spirit journey that we have. The tablets of Petelia show it in Dionysiac cult. That it was a favourite theme of pre-homeric bards is shown by the double occurrence of it in the Odyssey in the two νεκυῖαι, which have so distressed scholars. Homer looks only back to the Mycenaean age and so it is more probable that he did not live in the first period of colonization, the eighth century (p. 77), with Ionian vases (p. 78), but earlier in the ninth.[22] Who his Phoenicians were is another question, but Ras Shamra may throw some light on it. Of course Homer describes Ithaca and the cave of the Nymphs vividly, as an actual cave and not a mere poetic imagination (p. 74). But anyone who has ever seen almost any Greek island would describe it as goat-pasture (p. 73). It cannot be excluded that Homer visited Ithaca, but the question is as irrelevant as whether traditions of Odysseus survived in Ithaca. They survived in Ionia, as did traditions of king Latinus in Boeotia.[23]

Mr Casson has rightly tried to get inside the mind of Homer (p. 83) which was not normal or ordinary (p. 72), though Homer was like all Greeks (p. 75). This can be done only by an historical reconstruction and by an effort of imagination to understand an oral culture, which is so different from our own, and a culture dominated by the archaic religion and its magical, analogical, unhistorical, patterns of thought and practice. It cannot be done just by a liking for the modern Greeks, by a nostalgia for the Greek scenery that is temporarily denied to us, by imaginary pub-crawls on Ithaca, nor by fanciful generalizations like those that Homer detested lowlands or horses (p. 73), was a modern tourist, never worked at night (p. 83)—(did the Romans artificially produce a long Northern night to 'lucubrate' in?)—that the arrival of a ship was only as much an event in the eighth century as it is now. But vague phrases about creative powers (p. 83) or Man the Measure of all things, do not really explain how Homer 'must have worked'.

[21] cf. Kinkel, *Epicorum Graec. Frag.* p. 243. cf. also Karl Meuli, *Odyssee und Argonautika*, Weidmann, 1921.

[22] cf. T. W. Allen, *Homer: the Origins and the Transmission.*

[23] Hesiod, *Theogony*, 1013.

This can be discovered only from the text of Homer and by comparison with other oral poetry, by the study of Greek and other mythology, and of the Mycenaean age, more than in its 'mere historical outlines'. The above is a brief and therefore in appearance rather dogmatic sketch in polemical form of what it is hoped may be thought a more complete view than Mr Casson's, and one which attempts to do justice to the labours of German scholars, while agreeing with Mr Casson in rejecting their conclusions.

A Rejoinder

by Stanley Casson

Mr Hardie has helped Homeric studies by this article. Yet I find it still redolent of that atmosphere of the recluse, that monastic mode of approach which never enables the student to come into contact with the basis of any such research—namely the *mode of life* of a Greek in the age of Homer. Knowledge of that must be based on much detailed research of a type with which Mr Hardie is totally unacquainted—to judge by his article. He jeers faintly at what he calls my 'nostalgia for Greek scenery; imaginary pub-crawls on Ithaca' and so on. Had he understood me rightly he would have realized that I was basing myself on the fundamental life of the Mediterranean, which changes so little in thousands of years. He need only read the pages of Antiquity (xii, 464) to see how in one particular, at least, the potters' trade functions as it did two and a half thousand years ago. If he were in the Greek islands or mainland now he would see the Dark Ages being re-enacted in every particular—broken communications, retreat to hill fortresses, prowling barbarians (led perhaps by famous Homeric scholars!) and all the consequential changes in daily life which such conditions predicate. But, as my article ever so faintly hinted, scholars just will not realize that modes of Mediterranean life afford a priceless clue to problems of Homeric poetry. But they need intensive study. That Mr Hardie fails to understand such modes of life is clear from his statement (to take only one example) that 'cult is evidence of some surplus wealth, however modest, and with it goes priestly tradition and learning'. Mr Hardie has evidently not seen some of the small shrines of Greece where there are no priests or learning, and no trace

of surplus wealth unless the occasional peasant's offering (worth a drachma) can indicate this. Nor has he studied the pages of Pausanias where we get information about similar shrines and small unpriestly cults among illiterate folk. In brief he has not studied the mode of life of pious Greek peasants. It is all there to be studied.

In a word, Mr Hardie once more emphasizes how the scholar can remain unaffected by the bulk of valuable material available to him from sources other than the normal and standard.

Two points in particular rouse me to opposition. He asks me what I think of the Catalogue? and wonders why a poet cannot be a cartographer. My answer is that Homer, just as Mr Hardie and T. W. Allen say, took the Catalogue *en bloc* just to save himself the trouble of trying to be a cartographer. So too would Shelley have used a 'Baedeker' for his local colour (if 'Baedeker' had existed then) just to save himself the trouble of learning up his duller facts. Homer used the Catalogue and didn't bother in the least that it happens to be a very old edition, some centuries out of date. And can Mr Hardie quote me the name of any poet in history who was a cartographer or anything near one?

My other point concerns the wheeled tripods. Mr Hardie airily remarks 'It seems unlikely that Homer had never seen tripods on wheels before'. I can assure him that the likelihood of Homer having seen such tripods outside Ithaca is very remote indeed. But this is an archaeological matter for which I have no space for further explanation.

Mr Hardie still adheres to the view that Homer was more than an itinerant and poor bard. Again let him study a place where living epic is still to be heard and read—Cyprus. Minor itinerant bards earn a modest living there still, in the best Homeric manner. I can give him more details of this if he wishes. And Cyprus is a not unwealthy island.

Whether the Homeric poems were ever *written down* by Homer would plunge us both in a controversy for which there is unlimited recent material. All that is certain is that, provided we date Homer to a period between 800 and 700 B.C., the poems could have been written down in one of two media or both—in Greek or in the Cypriot syllabary, the latter a cumbrous medium, but one not to be sniffed at. Personally I side with Mr Hardie and his school who believe that the poems were oral for a long time after their composition. And if that helps to disprove the Separatists so much the better. But when it comes to

the question of the ' mixture of dialects ' which could ' never have been spoken anywhere, even as a *lingua franca* ' I must ask Mr Hardie for evidence according to the strictest scholastic rules. How do we know that there was no such *lingua franca* ? the English language itself in the last two years, at least in the Mediterranean, has become a most remarkable *lingua franca*. I doubt if Mr Hardie could translate all of it that he might hear ! The more the peoples jostle the more *franca* becomes the *lingua*. So I hesitate to subscribe to the theory of a ' bardic language '.

Still, Mr Hardie has helped to kill more Separatists. All praise to him. But I wish he would consider as a serious pursuit that most deeply interesting study ' Modes of life as conditioned by circumstances ' (such as climate, geography and economics). It is a study which should be part of every curriculum that examines the culture of the Mediterranean.

Reviews

ANCIENT ENGLAND. *By* EDMUND VALE. *B. T. Batsford*, 1941. *pp.* 150 *and* 147 *illustrations.* 10*s* 6*d.*

The first duty of a reviewer of this book must be to call attention and pay tribute to the high quality of the photographs chosen as its illustrations ; to the technical excellence of the half-tone blocks ; and to the beauty of the coloured frontispiece. It is hard to single out examples of special merit, but Beaumaris, Pevensey, Carnarvon and Bodiam castles (7, 8, 69, 71), Netley, Buildwas, Fountains, and Rievaulx abbeys (78, 81, 83, 84, 85, 86), and several of the domestic structures and their interior details (e.g. 96, 99, 101, 103, 104, 109, 111) must compel admiration. Those who have experienced the difficulty of photographing earthworks will also appreciate the views of Avebury, Bratton camp, and Maiden castle (16, 17, 22, 23). The only criticisms that suggest themselves are that ' Trevethy ' should read ' Trethevy ' in the caption of fig. 20, that the line-block illustrations on pp. 15 and 17 are below the standard of the rest, that the sources of the plans on pp. 18 and 19 are not stated, and that the plan on p. 97 has suffered from too drastic a reduction in scale.

The text comprises three sections of diverse origin, and its value varies from one section to another. It will be convenient to deal with them in a reverse order. The final chapter, by Mr Harry Batsford, gives a clear, simple and eminently readable account of the evolution of the English House, covering a wide field and bringing out a large number of interesting points which will certainly be fresh to the bulk of non-technical readers. It is perhaps a pity that the author has not included some small block-plans, to illustrate the lay-out of typical period-houses.

Chapters I to VI are Mr Vale's own work, but his chapter on Monuments of Religion embodies an earlier essay on monasteries not written as part of this book. While it is evidently intended primarily for the guidance of sightseers and thus stands in contrast with Mr Batsford's more informative chapter, this section nevertheless supplies a straightforward elementary account of the origin of the monastic orders and a clear description of the lay-out of a Cistercian abbey. Too much, however, is probably made of the cultural side of monastic life, and likewise of the freedom that the monks enjoyed in choosing the situation for their monastery ; seeing that they had, on the one hand, to get their land granted to them by its feudal superior and, on the other, to obtain the bishop's approval of their project. Again, two quite different reasons are given for the diminution of the number of *conversi* in the 14th century ; the second of

these is the orthodox one, and is preferable to the first. Notwithstanding these points, the chapter as a whole will be useful to holiday-makers with a taste for ecclesiastical antiquities, the more so as it provides many useful tips about the whereabouts of interesting structures.

The earlier chapters, however, inevitably invite criticism, and that on more than one count. In the first place, serious students can hardly approve Mr Vale's distinctive method of approach to archaeological questions. Romance, mystery and illusion can only darken counsel in matters where scientific method is the sole key to progress ; and to retard the general spread of sound opinions about the early history of the country is to do a disservice to our national culture as a whole. In the second place, Mr Vale's views on the excavation and preservation of ancient monuments give food for disquieting reflexion. Such words as ' débris ' and ' clearance ' have an ugly mid-Victorian sound, and tend to arouse our anxiety for the fate of relics. Under certain circumstances ' clearance and excavation ' may be far from ' harmless ' (p. 7), and we may hope that there are many cases in which archaeological material is still ' several feet below the well-kept sward '. It is much to be regretted that Mr Vale has missed this opportunity of informing his public regarding the irreparable damage that can result from the violent and inexpert use of the spade.

In the third place, this section of the book contains numerous mistakes in matters of fact, and statements which are liable to mislead the general reader. What follows is a random selection. The first Ancient Monuments Act was passed in 1882, not in 1913 (p. 4). Pre-Roman habitation-sites in England are not confined to high ground (p. 13) ; for evidence of this fact it is unnecessary to look further than, e.g. Mildenhall Fen, or the submerged land-surfaces of Essex. The expansion of scientific nomenclature to conform with the increase of knowledge is not a ' sad weakness ' (p. 14) but an indispensable condition of progress. The chronological data given on p. 15 are not only unacceptable but self-contradictory as well ; long barrows are now dated to the beginning of the second millennium, but Mr Vale's calculation, as it stands, would carry them back to about 5000 B.C., while at the same time he accepts a date of 10,000 B.C. for Grimes Graves, which were more or less contemporary with them. The treatment, in fact, of all the prehistoric periods is quite inadequate, as the author appears to ignore most of the results of modern prehistoric research, notwithstanding the fact that these are now easily available in readable and up to date works intended for the man in the street. Thus the Peterborough culture is never so much as mentioned ; nine lines (pp. 18 f.) dispose of the lives of the neolithic peoples as distinct from their funerary arrangements ; no hint is given of the racial and cultural vicissitudes disguised by the label of the Bronze Age ; the Iron Age is puzzlingly referred to (p. 28) as ' this

third great influx of peoples '. The celt and the axe, again, are regarded as two different types of implement (p. 16).

The Roman chapter gives similar grounds for criticism. For example, it was not the Roman monuments themselves but the thrilling speculations of the antiquaries about them that impressed the English popular imagination (p. 31). Mr Vale is surely the victim of ' complacency ' if he holds that we are now ' sufficiently enlightened to know at a glance what is and what is not Roman ' (p. 31). The building of coast defences on the Saxon Shore began in the later years of the third century, not in the fourth (p. 33). It is misleading to say that ' the greater part of the country ' is ' thickly dotted with ' villa-sites (p. 35); actually most of them lie southeast of a line joining Exeter with the mouth of the Trent, additional groups occurring particularly on the Welsh marches and in the Vale of York.

In his discussion of the castles Mr Vale runs into danger from excessive simplification. He states (p. 46) that ' like all Norman architectural works the castle was, no doubt, imitated from Roman fortresses seen on the Continent'; but ' architectural works ' include churches, and these can hardly have been imitated from Roman fortifications. The statement about the Roman connexions of the White Tower and Colchester castle (p. 46), though essentially true, may mislead if taken too literally. The great cost of large castles—and both of these had the Crown's resources behind them—is enough to explain why no larger examples were built later in this period (p. 46); and it is also unlikely that mere vassals would have been allowed to construct such formidable strongholds. No notice is taken of Dr Mackenzie's warning against the expressions ' keep ' and ' shell-keep '; and the view of the tower as an ultimate place of refuge is also restated (p. 47). The statement that *brattices* may be ' equated with ' *brackets* (p. 48) is not a happy one, as it might well suggest to an unwary reader that these two words possessed some etymological connexion. Lack of space forbids detailed criticism of the notes on castles (pp. 50–74). Like those on the monasteries, these undoubtedly contain points of interest to visitors; but Mr Vale's announcement (p. 50) that he has drawn them up with an eye to the castles' ' individuality ', rather than to their technical features, is disappointing to serious enquirers. ANGUS GRAHAM.

A HISTORY OF THE ANGLO-SAXONS. *By* R. H. HODGKIN. Second edition. 2 vols., *pp.* XXVIII, XII, 740. *Oxford University Press*, 1939. 30*s*.

This incorporation in a general survey of the results of modern research in many fields has enjoyed a well deserved popularity, so that a second edition has been required in less than four years. The scope and method of the volumes were fully explained in the extensive review published in these pages in

1936 (vol. x, 234). The author has now endeavoured to bring 'them up to date and to correct mistakes noticed in the first edition. Some changes . . . have been impracticable owing to the photographic process used in reproducing the book; but the notes of the first volume have been entirely reset'. It will be generally agreed that the author has successfully carried out the aims outlined in the above quotation from the preface, and revisions excluded for the reason stated do not appear to be either numerous or important. In particular, the earliest and darkest period has benefited by the works published in the intervening years, more particularly those of Professor Collingwood, Mr J. N. L. Myres and Mr T. D. Kendrick, and the admirable Dark Age maps of the Ordnance Survey to which attention is drawn in the preface.

There inevitably remain matters on which a legitimate difference of opinion continues. These were in most cases discussed when the first edition appeared, and to return to them would serve no useful purpose. We would rather congratulate Mr Hodgkin on the magnificent series of plates, which not only cover every aspect of Saxon art and industry but go far, in conjunction with his use of the surviving literature, to illustrate the life and thought of that age. The modern 'reconstructions' are, as he points out, 'open to criticism', but few will deny their value to the non-specialist reader, and only the pedant will require their excision on the grounds of possible errors of detail. The author's own 'principle that an approximation to the truth is better than a complete blank' must be allowed its due weight in this field as in others. We would only note the following points in the captions. The date 1100 beneath plate 24 refers to the MS, not to the mention of Arthur by Nennius. Actually an earlier record occurs in the Welsh poem on Catraeth written *c.* A.D. 600 which records the deeds of a certain warrior 'though he was no Arthur', proof of a wide fame within a century of his death. There is no reason to doubt the date in the early 6th century attributed to the inscription at Llansadwrn (fig. 41). Palaeography and hagiology are agreed. The formula should be restored PAX VOBISCUM rather than PACE as suggested. The main body of the Saxon cathedral at Canterbury was not of Roman date as implied in the caption below fig. 46. The site is beyond the limits of the Roman settlement and the orientation is different. (cf. *Victoria County History of Kent*, III, 73). C. A. R. RADFORD.

THE STONE AGE OF MOUNT CARMEL. Volume II: The fossil human remains from the Levalloiso-Mousterian. *By* THEODORE D. MCCOWN *and* SIR ARTHUR KEITH. *Oxford: Clarendon Press*, 1939. *pp.* XXIV, 390; 29 *plates*, 247 *figs.* £6 6*s.*

The first volume of this massive Report of the Joint Expedition of the British School of Archaeology in Jerusalem and the American School of Prehistoric

Research, in association with the Royal College of Surgeons of England, has already been reviewed in ANTIQUITY (1939, XIII, 171). In it the excavator, now Professor Dorothy Garrod, and Miss Dorothea Bate described the excavation of the three caves of the Wady Mughara at Mount Carmel, and the remains of prehistoric cultures and fauna found there. The authors of this volume describe in equally careful detail the mid-Palaeolithic human fossils. Their work has already been reviewed elsewhere by specialists in physical anthropology, and it would be impertinent for the present reviewer to praise it as though himself a specialist in that exacting subject. But the readers of ANTIQUITY are not accustomed to a narrow definition of archaeology, and it is perhaps not a bad thing that the findings of specialists should sometimes be brought to their notice by a layman writing for laymen. It is possible to make too much of the internal frontiers within the science of man.

Briefly, then, the remains from the Tabūn cave (1 female skeleton, a male mandible, and other fragments) and those from the Skhūl cave (2 adult male skeletons, 1 child's skeleton, a male and a female skeleton incomplete, and fragments of 5 other skeletons) come all from deliberate burials, and represent a single people. The range in form, however, between the extremes represented by the female Tabūn I and the male Skhūl IV, is ' unexpectedly great ', for ' the Tabūn type possesses many features which link it to the Neanderthal type of Europe, while the extreme Skhūl type passes towards a Neanthropic form such as that found at Crômagnon'. But ' between these extremes are intermediate forms ', and ' all the members of the group possess certain characters in common '. The ' Galilee man ' found in the Zutteiyeh cave 35 miles away by Turville-Petre in 1927 must belong to the same group. The variability which the group displays is remarkable, and to explain this there are two theories that may be advanced.

The authors adopt, as their considered opinion, the theory of evolutionary divergence. ' All who believe in evolution ' they write ' are agreed that Neanderthal man and modern (or Neanthropic) man are descendants of a common human stock. There must have been a time in the history of that ancestral stock when individuals were undergoing differentiation, along, at the least, two directions '—towards the ' purely Palaeoanthropic ' type known in Europe as the Neanderthal, and towards a Neanthropic type represented by the Crômagnon. In such a manner they ' suppose that the Mount Carmel people were in the throes of evolutionary change '. They proceed to consider these people's relationship in turn with the Krapina, Ehringsdorf, Neanderthal, Předmost, and Crômagnon fossils, and conclude that they were not actually ancestral to the Crômagnon type which in later Palaeolithic times invaded Europe, but were ' Neanderthaloid collaterals or cousins of the ancestors of that type '.

Palestine, being on the margin between Neanderthal Europe and the expected cradle of the real proto-Crômagnons further into Western Asia, will thus have produced a transitional type evolving between them.

The other theory, which after serious consideration the authors have rejected, would explain the Carmel people's variability by miscegenation—in other words, by regarding them as the hybrid progeny of a union between already existing Palaeoanthropic and Neanthropic stocks. The authors' objection to this is that ' to win support for such a theory we should have to produce the fossil remains of a Neanthropic form of man *from Palestine* (my italics) from a level as old, or older than the Levalloiso-Mousterian of Mount Carmel, as well as the remains of a *fully evolved* (my italics) Neanderthal form. We have no such evidence '. It is a fair comment on this that we have no evidence, either, of the presence in Palestine or anywhere else of a ' common stock ' from which the evolutionary divergence posited by them can at all probably have begun. Moreover, their theory seems to assume that it began at a time not long before the middle Palaeolithic period in which the Carmel people lived. Yet the human fossils known from the earlier Palaeolithic are now usually agreed to be already divisable into a Palaeoanthropic and a proto-Neanthropic group, the former being represented in Europe by Heidelberg man, and the latter by Swanscombe man, and with him Galley Hill man and perhaps other fossils including the Piltdown cranial vault. It is of course possible that the latter group, though representing already a generalized form of *Homo sapiens* ancestral to ' white ' Neanthropic man, had previously evolved from the same stock as later bred both Neanderthal and Crômagnon man, with the Carmel people between these —in other words, that evolution in a Neanthropic direction took place more than once. But the genetic and environmental factors concerned in such evolution are all too little known, and whatever the ' common stock ' postulated by the authors may have been, it seems a little harsh of them to reject the hybridity explanation of the Carmel people on the grounds that Palestine has yet produced no earlier Neanthropic nor fully-evolved Neanderthal forms as parents. Palestine has produced no earlier forms of man at all. And if it produced an earlier Neanderthal form, one would not expect this to be ' fully evolved ' like the later Neanderthal form in Europe, any more than an earlier Neanthropic form to be a ' fully evolved ' white man. Perhaps, then, the layman may be pardoned for feeling that Keith and McCown seem to reject the hybridity theory in a somewhat cavalier fashion.

Indeed, their fellow specialist Professor C. S. Coon, in his monumental volume *The Races of Europe* (New York, 1939 ; not yet reviewed in ANTIQUITY), adopts the hybridity theory outright, and tells us that it is precisely the evidence that they afford for its truth that makes the Carmel discoveries so particularly

important. Coon's opinion is based on the authors' preliminary publications only, and he may have found cause to revise it on the appearance of the present work. But he entitles his section on the subject ' The Neanderthaloid Hybrids of Palestine ' (op. cit. p. 25), and this and the whole chapter present an account of human lines of evolution during the Palaeolithic in which hybridity between Neanthropic and Palaeoanthropic strains plays a decisive part. Moreover, he mentions specially Keith and McCown as having made this concept allowable by their work on the Skhūl skeletons of Mount Carmel.

The reader will thus perceive that the results presented by the authors of this volume are of extraordinary interest for the study of human origins. Opinion has evidently yet to harden on their interpretation, as is only natural. But if there are already grounds for professional difference from their present judgment, to whichever side the laymen's sympathies may incline, he may confidently hope that agreement will in due course be all the more firmly established. C. F. C. Hawkes.

IRISH HERITAGE. *By* E. Estyn Evans. *Dundalk*: *W. Tempest*, 1942. *pp.* 190, 6 *plates*, 114 *figs.* 8*s* 6*d.*

For most of Europe the study of the past is the exploration of a distinct and isolated group of phenomena, but little related to the present. Ancient peoples have vanished, wars and migrations have altered cultural distributions, and, above all, progress, largely in the form of industrialism and mechanization, has ensured that the civilization of modern Europe shall bear little apparent relation to that of its more remote forbears.

This is not so in Ireland—one of the most conservative parts of the so-called ' Celtic fringe ' of western Europe. Ireland is like the subconscious mind in this, that she forgets nothing, from primeval practices to ancient grievances. The theme of Dr Evans' latest book is to show that Ireland's past is all of a piece with her present, and that the customs and beliefs of today illustrate to a large extent those of distant centuries. Like parts of Scotland, but unlike England, Ireland escaped Romanization and came only partially under English influence. This partial English domination has effected the widespread use of the English language without much admixture of English blood ; one might therefore argue that the original adoption of the Celtic tongue during the Bronze Age need not have been accompanied by the introduction of much Celtic blood. If this were so it would explain the curious phenomenon of a modern people whose traditions of custom and belief seem to go back to the megalithic period—a phenomenon which is not easily paralleled elsewhere, except, perhaps, in the closely related parts of Scotland and Brittany.

Such is the impression one receives after reading Dr Evans' fascinating

book. His nineteen chapters begin with sketches of geography, geology and the successive phases of human culture ; continue with an outline of the material culture of the country-folk of the present day ; and end with some account of their customs and beliefs. Each of these chapters, the author says, could without difficulty be expanded into a book ; it is indeed greatly to be hoped that he will lose no time in doing so, for the reader's chief complaint will be that in this book his appetite is whetted without always being satisfied. Frequently subjects are touched upon without adequate explanation. What, for instance, could be more tantalizing than the brief reference to sowing seed with the ' fiddle and bow '—' the silent fiddler making a striking picture as he strides firmly up and down the field ' (p. 91) ? If a remark like this makes one ill with frustrated curiosity, what of the mere mention that the aid of magic is still sought in causing illness, and that it is not five years since a case ' which resulted in death ' occurred near Belfast (p. 176) ? An author who thus tantalizes his readers could only be forgiven if he supplied adequate bibliographical references, but even these are denied. This is perhaps the most serious fault in the book.

Probably the most fascinating chapters are those on ' Customs and Beliefs ' —all too brief as they are. The deeply rooted fear of potentially malevolent beings, miscalled ' fairies ', the cult of holy wells and the offerings made thereat, the cult of sacred thorn-trees, the libations and charms used to avert evil, the obsessions about death and burial (e.g. ' that the dead live on in the graveyard, and that the last person buried acts as servant to the others '—suggestive as a possible link with the megalithic religion), the practice of magic and fertility rites—all these make it evident that the old paganism lives on, thinly disguised beneath a veneer of Christianity in which the old gods can be detected in their guise as Christian saints. That these customs and beliefs are widespread and deeply rooted, and not mere occasional freaks, will be realized by all who have had any experience of Irish peasantry. The present reviewer has seen and heard much of it for himself some 30 years ago, and remembers meeting an old woman who, because of her reputation as a witch, enjoyed free board and lodging in her itinerations from village to village. None dared offend her for fear of her spells, and the reception of her formal blessing is an enduring memory.

After reading this book it is difficult to escape the conviction that the soul of Ireland is as old as the megalithic, if not older, and that it has been enriched by elements derived from Celtic, Norse and Anglo-Norman immigrants, but that none of these last are of primary importance. The oldest stocks have absorbed each newcomer, though two of the latter have, in turn, imposed their languages, partially or completely, on the indigenous population. The fact that the Irish language is Celtic does not mean that the people are ' Celtic ', any more than the general use of English makes them English.

Many aspects of the present-day peasant culture are briefly described, including fields, villages, booleys (or temporary dwellings among the summer pastures), houses and their contents, seed-time, harvest, carts, roads, spades, objects of wood, skin, straw, etc., the bog, seashore, and the festivals and fairs. In medieval Ireland, as in the pre-Celtic Bronze Age of England, ' cattle-herding played a dominant part, to which the claims of agriculture were subordinated '. This fits in well with the views already expressed regarding the pre-Celtic character of the present Irish peasant-culture.

The volume is very well illustrated with photographs and drawings. A particularly happy feature, and one that others might well follow, is the way in which a large proportion of the drawings are placed in the margin exactly alongside of the place in the text where they are described, instead of interrupting the text. The author avoids grouping drawings of separate objects into large, composite figures, which involve references from several scattered pages and all the inconvenience with which this is attended. The marginal sketches, which, like the others, are from the author's pen, are delightful in their neatness and clarity—a point which needs emphasizing in view of the ever-present tendency of publishers to over-reduce.

Among survivals in material equipment that may occasion some surprise are the use of the sling, primarily as an amusement, but useful as a weapon at times ; the bull-roarer and spear-thrower (as toys), and the eel-spear and harpoon. The last three, like the bow and arrow, are legacies from the mesolithic ; the sling probably dates no further back than the Celtic war-lords of the Late Bronze and Iron Ages, with whom it was the pre-eminent missile weapon ; while the bull-roarer is invested with a variety of magical properties in the different parts of the world where it survives today—' the most ancient widely spread and sacred religious symbol in the world '.

Altogether this is a notable book, one of the chief lessons of which is that the study of modern peasant culture and folklore may in certain regions be the counterpart of archaeological research, and that neither can be fully understood without the other. E. Cecil Curwen.

THE PREHISTORIC ARCHAEOLOGY OF NORTHWEST AFRICA. *By* Frederick R. Wulsin. *Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, vol.* xix, *no.* 1. 173 *pages.* 92 *text-illustrations. Cambridge, Massachusetts,* 1941. 3 *dollars.*

This is a book compiled wholly from written sources : Mr Wulsin, who has not visited North Africa, nor had access to the bulk of the material described, himself makes no other claim for it. Within these limits it is a useful piece of

work, for it summarizes from a mass of scattered periodicals the literature of prehistoric investigation in this region. Mr Wulsin deals lucidly with accounts, some of which, in their original form, are singularly lacking in clearness of observation and expression ; but the main result of his survey is to expose the poor and unscientific quality of much of the work in prehistoric archaeology so far undertaken in northwest Africa. This being so, one cannot help regretting that he did not produce this summary of the literature as an interim publication on a small scale, reserving the rather ambitious form in which it now appears until such time as a visit to the region and a personal survey of the material again becomes possible. In other words, the amount of solid evidence to be extracted from written sources alone hardly justifies the well-planned and spacious framework in which it is presented.

Mr Wulsin opens with a brief survey of regional geography, and then passes to a detailed account of the Stone Age sequence, and the possibilities of dating afforded by raised shore-lines and fauna. This part of the book is slightly marred by the author's assumption that it will be read by those who have no previous knowledge of prehistoric archaeology, which obliges him to introduce frequent rapid and sketchy explanations of elementary matters which are quite out of place in a work of this type. A chapter on the early historic period is designed to show that there is no fundamental difference between the culture of the neolithic peoples of Africa Minor and that of the barbarians colonized by the Carthaginians and Romans. Two long chapters on the rock engravings and paintings of the region give a clear and useful account of the material so far discovered, and the divergent opinions on dating put forward by such authorities as Breuil, Obermaier, Frobenius, Vaufrey and others. Although Mr Wulsin is chary of expressing personal opinions, he seems to follow Vaufrey in the view that none of the paintings or engravings are older than the Neolithic, and his survey of the evidence shows that there is solid reason for it. The work concludes with a brief chapter on the human skeletal material, and a summary of results.

The least satisfactory part of the work is that which deals with the Lower and Middle Palaeolithic, but this is largely due to lack of evidence or inadequate publication—shortcomings for which Mr Wulsin cannot be held responsible. His tentative dating of the Chellean to the Mindel-Riss interglacial is based on Antoine's investigation of the 30 m. shore-line at El Hank, but since this book was in print the question has been considerably advanced by work undertaken by Breuil, Ruhlmann and Neuville in the summer of 1941. This shows that in the region of Casablanca the Chellean is contemporary with the final stages of the 90 m. shore-line, and that the so-called ' Chellean ' found by Antoine in the 30 m. beach is not a single industry, but includes a typical Acheulean,

practically unrolled, with a heavily rolled Chellean obviously derived from an older deposit.

Mr Wulsin's account of the Aterian does not make full use of available information. He describes the Aterian as a Mousterian with the addition of a single tool, the tanged point. In fact, the Aterian tool-kit includes other elements foreign to the classic Mousterian, such as end-scrapers and the leaf-shaped bifacial blades formerly described as S'baikian, but recently found in association with tanged points by Ruhlmann at El-Khenzira and by Antoine at Tit-Mellil.

Mr Wulsin's book, as we should expect from the Peabody Museum, is well-printed and well-produced ; the only noticeable error is in the diagrams on p. 81, where Capsian everywhere appears as ' Caspian '. The completion of the work must have been much hindered by the outbreak of war, and still more by the events of June 1940. We are all the more grateful to Mr Wulsin for carrying it through, and so filling a gap in our shelves until such times as circumstances make possible a survey based on personal investigation.

D. A. E. GARROD.

BIBLIOGRAPHIE DE LA PREHISTOIRE EGYPTIENNE, 1869–1938. *By* C. BACHATLY. *Société Royale de Géographie d'Egypte, Cairo*, 1942. *pp.* x, 78. 30 *piastres.*

This excellent bibliography of 836 books and articles includes not only items confined to predynastic Egypt but also some papers dealing with early dynastic times. The literature listed, contains items written in English, French, German, Italian, Spanish, Portuguese, Swedish, Finnish, Russian, and Arabic, and its preparation is therefore a linguistic triumph, as indeed every comprehensive bibliography of Egyptology must be.

The subjects covered include rock-pictures, prehistoric art, flora and fauna, prehistoric ships and shipping and funeral barques, pre-dynastic tombs, craniology, pottery, relations between Egypt and Sumer, and between Egypt, the Aegean and the rest of Europe, as well as papers on palaeolithic, mesolithic, neolithic and bronze age cultures.

It will be a welcome addition to the library of the general prehistorian, and will provide a foundation for those studying the dynastic periods of Egypt.

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